



TETRA TECH

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July 7, 2014

Mr. Jeffrey Lippert
On-Scene Coordinator
U.S. Environmental Protection Agency Region 5
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Subject: **Draft Report for the Whittier Cleaners Site Assessment**
 EPA Contract No. EP-S5-13-01
 Technical Direction Document No. S05-0001-1404-003
 Document Tracking No. 0016

Dear Mr. Lippert:

Tetra Tech, Inc. (Tetra Tech) is submitting this Draft Site Assessment Report summarizing site assessment activities conducted at the Whittier Cleaners site on May 20, 2014. This report summarizes the findings of the field activities conducted at the site located at 15010 Charlevoix Street, in Grosse Pointe Park, Michigan.

If you have any questions regarding this report, please contact me at (313) 404-3225 and/or via e-mail at Sean.Kane@TetraTech.com.

Respectfully,

Sean Kane
Project Manager

Enclosure

cc: Sam Chummar, EPA Project Officer (letter only)
 Kevin Scott, Tetra Tech Program Manager
 TDD File

**SITE ASSESSMENT REPORT
FOR THE
WHITTIER CLEANERS SITE
15010 CHARLEVOIX STREET,
GROSSE POINTE PARK, WAYNE COUNTY, MICHIGAN**

U.S. Environmental Protection Agency
Emergency Response Branch
Region 5
9311 Groh Road
Grosse Ile, MI 48138

Submitted by

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EPA Contract No. EP-S5-13-01

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1 LABORATORY ANALYTICAL RESULTS

1.0 INTRODUCTION

Under the Superfund Technical Assessment and Response Team (START) Contract No. EP-S5-13-01, Technical Direction Document (TDD) No. S05-0001-1404-003, the U.S. Environmental Protection Agency (EPA) tasked Tetra Tech, Inc. (Tetra Tech), to assist the EPA On-Scene Coordinator (OSC) in performing a site assessment at the Whittier Cleaners site in Grosse Pointe Park, Wayne County, Michigan. EPA requested that Tetra Tech collect three drum samples, one underground storage tank (UST) sample, and four soil gas samples at the site. The purpose of the sampling was to determine the presence of hazardous materials at the site. Tetra Tech also performed written and photographic documentation of site conditions, conducted air monitoring, and evaluated the potential for imminent and substantial threats to human health and welfare or the environment. Under the direction of OSC Lippert, Tetra Tech START conducted the site assessment activities on May 20, 2014.

This site assessment report is organized into the following sections:

- **Introduction** – Provides a brief description of the objectives and scope of site assessment activities
- **Site Background** – Details the site description and history
- **Field Investigation** – Discusses the methods and procedures used during the site assessment
- **Analytical Results** – Presents the analytical results for the samples collected during the site assessment
- **Threats to Human Health and the Environment** – Identifies the conditions at the site that warrant a removal action under the National Oil and Hazardous Substances Pollution Contingency Plan (NCP)
- **Conclusions and Recommendations** – Provides a summary of the site assessment findings and Tetra Tech's recommendations based on those findings

In addition, this site assessment report contains three appendices and one attachment. Appendix A includes site figures, including site location, layout, and sampling location and analytical results maps. Appendix B provides the photographic documentation log of site conditions during the site assessment. Appendix C provides a summary of analytical results and the data validation report. The laboratory analytical reports for the samples collected during the site assessment are included as an attachment to this report.

2.0 SITE BACKGROUND

The Whittier Cleaners site is located at 15010 Charlevoix Street in Grosse Pointe Park, Wayne County, Michigan (Appendix A, Figure 1). The geographic coordinates of the site are 42°38'50.33" North latitude and 82°94'42.96" West longitude. The site is located in a mixed commercial and residential area, and is bordered by Charlevoix Street to the north, Maryland Street to the east, a residential property to the south, and a public alley to the west (Appendix A, Figures 1 and 2). Commercial properties are located across the public right-of-ways, with residences located beyond. No surface water bodies are located within a 1-mile radius of the site; however, Lake St. Clair is located approximately 1.5 miles southeast of the site.

The site contains a one-story building totaling approximately 1,740 square feet and a concrete-paved parking area located east of the building. The site was previously utilized as a dry-cleaning business. The site is no longer active. At the time of this site assessment report, no additional information was available regarding the site history.

3.0 FIELD INVESTIGATION

Tetra Tech performed the site assessment on May 20, 2014. Field investigation activities included a site reconnaissance; container inventory; and drum, UST, and soil gas sampling. During these activities, Tetra Tech START conducted air monitoring using a RAE Systems MultiRAE Pro multi-gas air monitor to assess the air in the breathing zone for carbon monoxide, hydrogen sulfide, lower explosive limit, oxygen, and volatile organic compounds (VOC). All ambient air-monitoring readings were at or below background levels. Tetra Tech START also used a Ludlum Model 19 Micro-R Meter to monitor for radioactive materials at the site, and no such materials were identified.

The following sections describe the site reconnaissance, site observations documented during the investigation, and sampling activities conducted during the site assessment.

3.1 SITE RECONNAISSANCE

On May 20, 2014, the EPA OSC and Tetra Tech START mobilized to the site. EPA and Tetra Tech START personnel conducted a site reconnaissance to perform air monitoring and radiation screening, develop a sampling strategy, and conduct an inventory of the drums, USTs, and containers located within the site building. During the site reconnaissance, written and photographic documentation of current site conditions were collected and potential environmental threats and sampling locations were noted.

Appendix B provides photographic documentation of site conditions at the time of the site reconnaissance.

3.2 SITE OBSERVATIONS

During the site reconnaissance, the site was non-operational and vacant but chemicals associated with the former operations were still present. Tetra Tech documented four 55-gallon steel drums, one smaller steel drum with a capacity of approximately 35 gallons, one underground storage tank (UST), with a capacity of approximately 200 gallons, that had been removed from its cavity and was confirmed to be empty, and a second UST that was still present in the ground. Tetra Tech also documented a metal cap located in the central portion of the building that is consistent with a UST fill port cover. Additionally, Tetra Tech documented approximately 15 5-gallon containers of household cleaners and paint located in the eastern portion of the building. Tetra Tech also observed an area of cut concrete in the western portion of the building consistent with the removal of the UST. The drums, removed UST, and containers were closed or capped, and appeared to be in fair condition with no signs of deterioration or damage. Tetra Tech was unable to determine the condition of the UST that still remains underneath the sub slab foundation

The locked and secured site building appeared to be in fair condition. Additionally, no floor drains or significant staining were evident in the building.

The following hazards were identified during the site reconnaissance activities:

- Uncontrolled, unlabeled waste material in the drums, AST, UST, and small containers
- Proximity of the site to residential properties located to the south of the site, and to the commercial properties located to the north, east, and west of the site
- Likely presence of at-risk human populations, including children and the elderly, in proximity to the site

3.3 SAMPLING ACTIVITIES

In accordance with the site-specific field sampling plan and health and safety plan, EPA directed Tetra Tech START to collect three liquid samples from the drums, one liquid sample from the UST, and four soil gas samples from outside the adjoining residential property for laboratory analysis. The locations and analytical exceedences for the indoor samples (i.e., drum and UST samples) and outdoor samples (i.e., soil gas samples) are provided in Appendix A, Figures 3 to 6.

Tetra Tech personnel donned Level B personal protective equipment (PPE) for the drum and UST sampling event. The liquids within the drums were collected using disposable drum thieves and bailers. All liquid samples were placed into 1-liter amber glass jars provided by the laboratory, labeled appropriately, and placed on ice. Tetra Tech personnel used Level D PPE during the soil gas sampling. The soil gas samples were collected approximately 3 feet below ground surface (BGS) in the backyard of the residential property that borders the site building to the south. All air samples were collected into 1-liter Tedlar bags provided by the laboratory, labeled appropriately, and then placed into a portable chest, shortly after sampling in order to minimize the exposure time of the samples to sunlight. The sample identification numbers and descriptions are as follows:

- WC-DRUM-01 – Liquid sample collected from the 35-gallon drum located in the western portion of the building
- WC-DRUM-02 – Liquid sample collected from a 55-gallon drum located in the western portion of the building
- WC-DRUM-03 – Liquid sample collected from a 55-gallon drum located in the western portion of the building
- WC-UST-01 – Liquid sample collected from the UST located in the central portion of the building
- WC-SVP-01 – Soil gas sample collected along the exterior south-facing wall of the site building, at the adjoining residential property
- WC-SVP-02 – Soil gas sample collected along the exterior south-facing wall of the site building, at the adjoining residential property
- WC-SVP-03 – Soil gas sample collected along the exterior south-facing wall of the site building, at the adjoining residential property
- WC-SVP-04 – Soil gas sample collected near the residence located south of the site

Samples WC-DRUM-01, WC-DRUM-02, WC-DRUM-03, and WC-UST-01 were analyzed for reactive cyanide using EPA Method SW7.3.3.2; toxicity characteristic leaching procedure (TCLP) Michigan metals (ICP/OES) using EPA Method SW6010C; TCLP mercury using EPA Method SW7470A; TCLP semivolatile organic compounds (SVOC) using EPA Method SW8270D; TCLP volatile organic compounds (VOC) using EPA Method SW8260B; ignitibility using EPA Method SW1010; reactive sulfide using EPA Method SW7.3.4.2; and corrosivity using EPA Method SW9045D.

Samples WC-SVP-01, WC-SVP-02, WC-SVP-03, and WC-SVP-04 were analyzed for VOCs using EPA Method EPA TO-15. The analytical results for these samples were given in parts per billion volume (ppbv), while the EPA Region 9 Risk-Based Screening Levels (RSL), for ambient air, were provided in

micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Given this situation, it was necessary to convert the Region 9 RSL standards from $\mu\text{g}/\text{m}^3$ into ppbv. This was accomplished by multiplying the universal gas constant (0.08205) by the standard temperature in Kelvin (298), then dividing the resulting number by the molar mass of each detected compound, and then multiplying the resulting number by the Region 9 RSL criteria for soil gas in a residential area.

Following the sample collection activities on May 20, 2014, the liquid drum samples were placed into a cooler containing ice and were kept in the possession of Tetra Tech START. The trip blank air sample and the four Tedlar bag air samples were placed into a portable chest with neutral and ambient air conditions (i.e., no sunlight) and were kept in the possession of Tetra Tech START. On May 21, 2014, Tetra Tech START hand-delivered all samples and the laboratory-provided trip blank air sample, to RTI Laboratories, Inc., in Livonia, Michigan, for laboratory analysis. Note: The trip blank air sample, which was filled at the laboratory with zero air, was transported, unopened, to and from the field, in a portable chest, and returned with the other Tedlar bag soil gas samples. The purpose of the trip blank is to assess laboratory and/or shipping-transportation sources of contamination.

4.0 ANALYTICAL RESULTS

The analytical results for each of the four liquid and four air samples collected during the site assessment are presented in Appendix C, along with the data verification report associated with the samples. Laboratory data reports are included as an attachment to this report. The analytical results were compared to the hazardous waste identification criteria presented in Title 40 of the *Code of Federal Regulations* (CFR), Part 261. According to 40 CFR, Part 261.2, a substance is considered a hazardous waste if it exhibits any of the characteristics of ignitability, corrosivity, toxicity, or reactivity. Detected analytical results for the samples are summarized below.

In the case of copper and zinc, the analytical result was compared to the Michigan Department of Environmental Quality (MDEQ) Part 201 General Cleanup Criteria and Screening Levels for Direct Contact in residential areas (dated December 30, 2013).

Each of the parameters analyzed in the samples collected during the site assessment is listed below, with a summary of the results for each sample collected.

Reactive Cyanide and Reactive Sulfide Results

- No reactive cyanide and reactive sulfide was detected in any of the liquid samples. However, the laboratory control samples, for these parameters, yielded 0% recovery. Therefore, the non-

detected results were qualified as rejected. Reactive cyanide and sulfide may be present in the sample, but the current analyses are inadequate to demonstrate their presence or absence.

TCLP Michigan Metals Results

- Barium, cadmium, copper, lead, and zinc were detected in sample WC-DRUM-01 at concentrations of 5.0 micrograms per liter ($\mu\text{g/L}$) (0.005 milligrams per liter [mg/L]), 1.4 $\mu\text{g/L}$ (0.0014 mg/L), 100 $\mu\text{g/L}$ (0.1 mg/L), 18 $\mu\text{g/L}$ (0.018 mg/L), and 310 $\mu\text{g/L}$ (0.310 mg/L), respectively. The results for barium, cadmium, and lead are less than the toxicity criteria for these metals of 100.0 mg/L , 1.0 mg/L , and 5.0 mg/L , respectively, as stated in 40 CFR Part 261.24. The results for copper and zinc were less than the criteria for these metals of 20,000 milligrams per kilogram (mg/kg) and 170,000 mg/kg , respectively, as stated in MDEQ Part 201 General Cleanup Criteria and Screening Levels for Direct Contact in residential areas (dated December 30, 2013).
- Barium, cadmium, chromium, copper, lead, and zinc were detected in samples WC-DRUM-02 and WC-DRUM-03 at concentrations of 39 $\mu\text{g/L}$ and 41 $\mu\text{g/L}$ (0.039 mg/L and 0.041 mg/L), 2.9 $\mu\text{g/L}$ and 2.6 $\mu\text{g/L}$ (0.0029 mg/L and 0.0026 mg/L), 30 $\mu\text{g/L}$ and 64 $\mu\text{g/L}$ (0.030 mg/L and 0.064 mg/L), 120 $\mu\text{g/L}$ and 260 $\mu\text{g/L}$ (0.120 mg/L and 0.260 mg/L), 20 $\mu\text{g/L}$ and 180 $\mu\text{g/L}$ (0.020 mg/L and 0.180 mg/L), and 2,400 $\mu\text{g/L}$ and 520 $\mu\text{g/L}$ (2.400 mg/L and 0.520 mg/L), respectively. The results for barium, cadmium, chromium, and lead are less than the toxicity criteria for these metals of 100.0 mg/L , 1.0 mg/L , 5.0 mg/L , and 5.0 mg/L , respectively, as stated in 40 CFR Part 261.24. The results for copper and zinc were less than the criteria for these metals of 20,000 mg/kg and 170,000 mg/kg , respectively, as stated in the MDEQ Part 201 General Cleanup Criteria and Screening Levels for Direct Contact in residential areas (dated December 30, 2013).
- Barium, cadmium, copper, and zinc were detected in sample WC-UST-01 at concentrations of 9.6 $\mu\text{g/L}$ (0.0096 mg/L), 2.0 $\mu\text{g/L}$ (0.0020 mg/L), 50 $\mu\text{g/L}$ (0.050 mg/L), and 89 $\mu\text{g/L}$ (0.089 mg/L), respectively. The results for barium and cadmium are less than the toxicity criteria for these metals of 100.0 mg/L and 1.0 mg/L , respectively, as stated in 40 CFR Part 261.24. The results for copper and zinc were less than the criteria for these metals of 20,000 mg/kg and 170,000 mg/kg , respectively, as stated in the MDEQ Part 201 General Cleanup Criteria and Screening Levels for Direct Contact in residential areas (dated December 30, 2013).

TCLP Mercury Results

- Mercury was detected in samples WC-DRUM-01, WC-DRUM-02, WC-DRUM-03, and WC-UST-01 at concentrations ranging from 0.77 $\mu\text{g/L}$ (0.00077 mg/L) to 1.7 $\mu\text{g/L}$ (0.0017 mg/L). These results are less than the criterion for mercury of 0.2 mg/L , as stated in 40 CFR Part 261.24.

TCLP SVOC Results

- No TCLP SVOCs were detected in any of the liquid samples.

TCLP VOC Results

- Tetrachloroethene and trichloroethene were detected in samples WC-DRUM-01, WC-DRUM-02, and WC-DRUM-03 at concentrations ranging from 300 µg/L (0.300 mg/L) to 50,000 µg/L (50 mg/L) and 7,900 µg/L (7.9 mg/L) to 56,000 µg/L (56.0 mg/L), respectively. The results for tetrachloroethene and trichloroethene exceed the toxicity criteria for these compounds of 0.7 mg/L and 0.5 mg/L, respectively, as stated in 40 CFR Part 261.24. Therefore, the waste associated with these samples is considered hazardous according to 40 CFR 261.24.
- Benzene, tetrachloroethene, and trichloroethene were detected in Sample WC-UST-01 at concentrations of 160 µg/L (0.160 mg/L), 540 µg/L (0.540 mg/L), and 5,500 µg/L (5.5 mg/L), respectively. The results for benzene and tetrachloroethene are less than the toxicity criteria for these compounds of 0.5 mg/L and 0.7 mg/L, respectively, as stated in 40 CFR Part 261.24. The results for trichloroethene exceed the toxicity criterion for this compound of 0.5 mg/L. Therefore, the waste associated with this sample is considered hazardous according to 40 CFR 261.24.

Flashpoint/Ignitibility Results

- The flashpoints of samples WC-DRUM-01, WC-DRUM-02, WC-DRUM-03, and WC-UST-01 were 120 degrees Fahrenheit (°F). This result is less than 140°F. Therefore, the wastes associated with these samples are considered hazardous for the characteristic of ignitibility according to 40 CFR 261.21.

Corrosivity Results

- The pH of the waste samples ranged from 7.01 to 7.04 standard units (SU). Therefore, the wastes associated with these samples are not considered hazardous for the characteristic of corrosivity according to 40 CFR 261.22.

Soil Gas VOC Results

The trip blank yielded detectable concentrations of half of the analytes, including relatively high concentrations of ethanol and the common laboratory contaminants acetone and methylene chloride. The four field samples, described below, yielded essentially the same mixture of analytes in substantially similar concentrations. Due to the high level of contamination in the trip blank, there is no firm evidence for any analytes in the soil gas represented by the field samples.

- 1,2-dibromoethane, 1,4-dichlorobenzene, benzene, hexachlorobutadiene, and trichloroethene were detected in sample WC-SVP-01 at concentrations of 0.54 ppbv, 0.56 ppbv, 1.2 ppbv, 0.88 ppbv, and 0.74 ppbv, respectively. The results for these compounds exceed the risk-based screening levels of 0.006 ppbv, 0.43 ppbv, 1.13 ppbv, 0.12 ppbv, and 0.39 ppbv, respectively, when taking into consideration the calculation described in Section 3.3.
- 1,4-dichlorobenzene, benzene, and trichloroethene were detected in sample WC-SVP-02 at concentrations of 0.44 ppbv, 1.5 ppbv, and 0.58 ppbv, respectively. The results for these compounds exceed the risk-based screening levels of 0.43 ppbv, 1.13 ppbv, and 0.39 ppbv, respectively, when taking into consideration the calculation described in Section 3.3.
- 1,2-dibromoethane was detected in sample WC-SVP-03 at a concentration of 0.19 ppbv. This result exceeds the risk-based screening level of 0.006 ppbv, when taking into consideration the calculation described in Section 3.3.
- None of the VOC compounds detected in sample WC-SVP-04 exceeded the toxicity criterion, when taking into account the calculation described in Section 3.3.
- 1,2-dibromoethane and hexachlorobutadiene were detected in the trip blank at concentrations of 0.29 ppbv and 0.67 ppbv, respectively. The results for these compounds exceed the risk-based screening levels of 0.006 ppbv and 0.12 ppbv, respectively, when taking into consideration the calculation described in Section 3.3.

5.0 THREATS TO HUMAN HEALTH AND THE ENVIRONMENT

Factors to be considered in determining the appropriateness of a potential removal action at a site are delineated in the NCP at 40 CFR 300.415(b)(2). Threat factors applicable to the site are summarized below.

- **Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release**

Given the unoccupied and unsecured nature of the site building, the characteristically hazardous wastes located in the drums and UST pose a threat of release either through deterioration of the drums or UST or by trespassers potentially opening the drums or UST.

- **Actual or potential exposure of nearby human populations, animals, or the food chain to hazardous substances or pollutants or contaminants**

A residence is located directly adjacent to the site, approximately 5 feet south of the site building. The presence of the residence increases the likelihood of exposure to residents caused by a

release of hazardous substances located at the site. During the site assessment, the building contained drums with no secondary containment, and a UST of unknown construction materials and condition. Samples collected during the site assessment contained characteristically hazardous wastes.

- **Actual or potential contamination of drinking water supplies or sensitive ecosystems**

The presence of drums with no secondary containment and a UST of unknown construction materials and condition in the site building could result in the release of hazardous wastes into nearby storm sewer catch basins or groundwater sources. Pollutants that enter bodies of water can be retained for long periods of time and can negatively impact sensitive ecosystems.

- **Threat of fire or explosion**

The threat of fire or explosion at the site is high based on the flammable nature of the wastes located at the site and the unoccupied state of the site building. During the site assessment, all four liquid samples exhibited the characteristic of ignitibility. The probability of an intentional fire being set at a vacant facility will increase over time. In addition, the storage of potentially incompatible chemicals without secondary containment could result in an unintentional fire caused by the interaction of the contents of deteriorating containers.

6.0 CONCLUSIONS AND RECOMMENDATION

Tetra Tech collected four liquid samples during the site assessment. Analytical results were compared to the criteria set forth in 40 CFR Part 261 and MDEQ Part 201 General Cleanup Criteria and Screening Levels for Direct Contact in residential areas (dated December 30, 2013) to determine whether the wastes stored at the site are considered hazardous. Tetra Tech also collected four soil gas samples and compared the results of these samples to EPA risk-based screening levels. Analytical results for all of the liquid samples indicated the presence of characteristically hazardous wastes at the site.

The hazards and threats summarized below also were identified during the site assessment:

- The site building contained five drums of various contents in varying states of deterioration, all without secondary containment, and one UST of unknown construction materials and unknown condition.
- The site is bordered along the south by residential properties, thus increasing the likelihood of exposure to residents caused by a release of hazardous substances at the site.

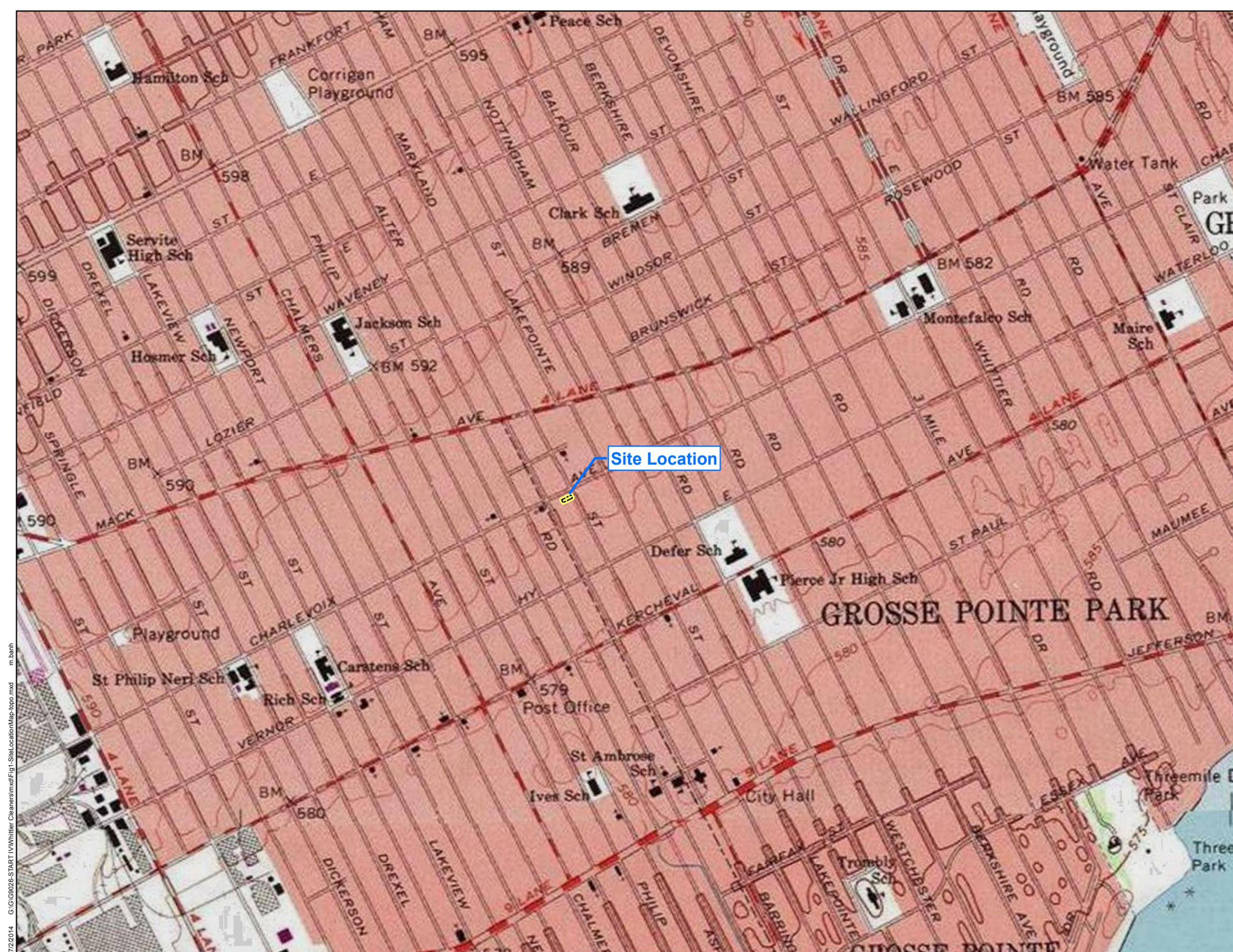
- The on-site building is unoccupied. The continued deterioration of the building increases the chance of further degradation of the containers, the likelihood of a fire, and the likelihood of a release to the environment.

The analytical results indicate the presence of flammable materials in the site building, as well as the presence of material that contains hazardous levels of trichloroethene and tetrachloroethene. Based on these results, as well as on the factors listed above, Tetra Tech recommends that a removal be performed to mitigate the hazards currently present at the site. Additionally, given the uncertainty of the soil gas results, EPA may want to consider repeating the soil gas sampling activities at the adjacent property or may want to investigate the potential of vapor intrusion (via indoor air samples) at the adjacent property.

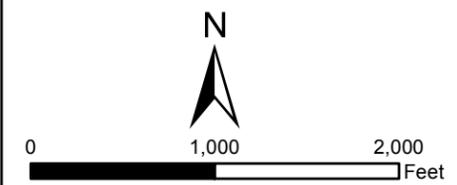
APPENDIX A

FIGURES

- 1 – SITE LOCATION MAP
- 2 – SITE LAYOUT MAP
- 3 – OUTDOOR SAMPLING LOCATION MAP
- 4 – INDOOR SAMPLING LOCATION MAP
- 5 – OUTDOOR SAMPLING: ANALYTICAL EXCEEDENCES MAP
- 6 – INDOOR SAMPLING: ANALYTICAL EXCEEDENCES MAP



Legend
 Approximate Property Boundary



WHITTIER CLEANERS SITE
 15010 CHARLEVOIX STREET
 GROSSE POINTE, WAYNE COUNTY, MI
 TDD: S05-0001-1404-003



FIGURE 1
 SITE LOCATION MAP

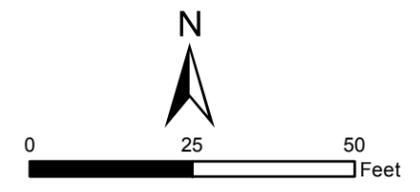
7/2/2014 G:\G09026-START\Whittier Cleaners\mxd\Fig1-SiteLocationMap-topo.mxd m. barnh



Approximate Property Boundary

Charlevoix St

Maryland St



WHITTIER CLEANERS SITE
15010 CHARLEVOIX STREET
GROSSE POINTE, WAYNE COUNTY, MI
TDD: S05-0001-1404-003



FIGURE 2
SITE LAYOUT MAP

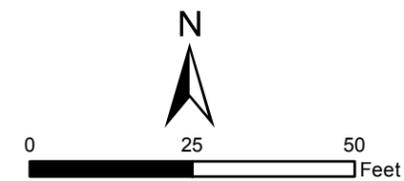


Legend

- Outdoor Air Sampling Location
- Approximate Property Boundary

Note:

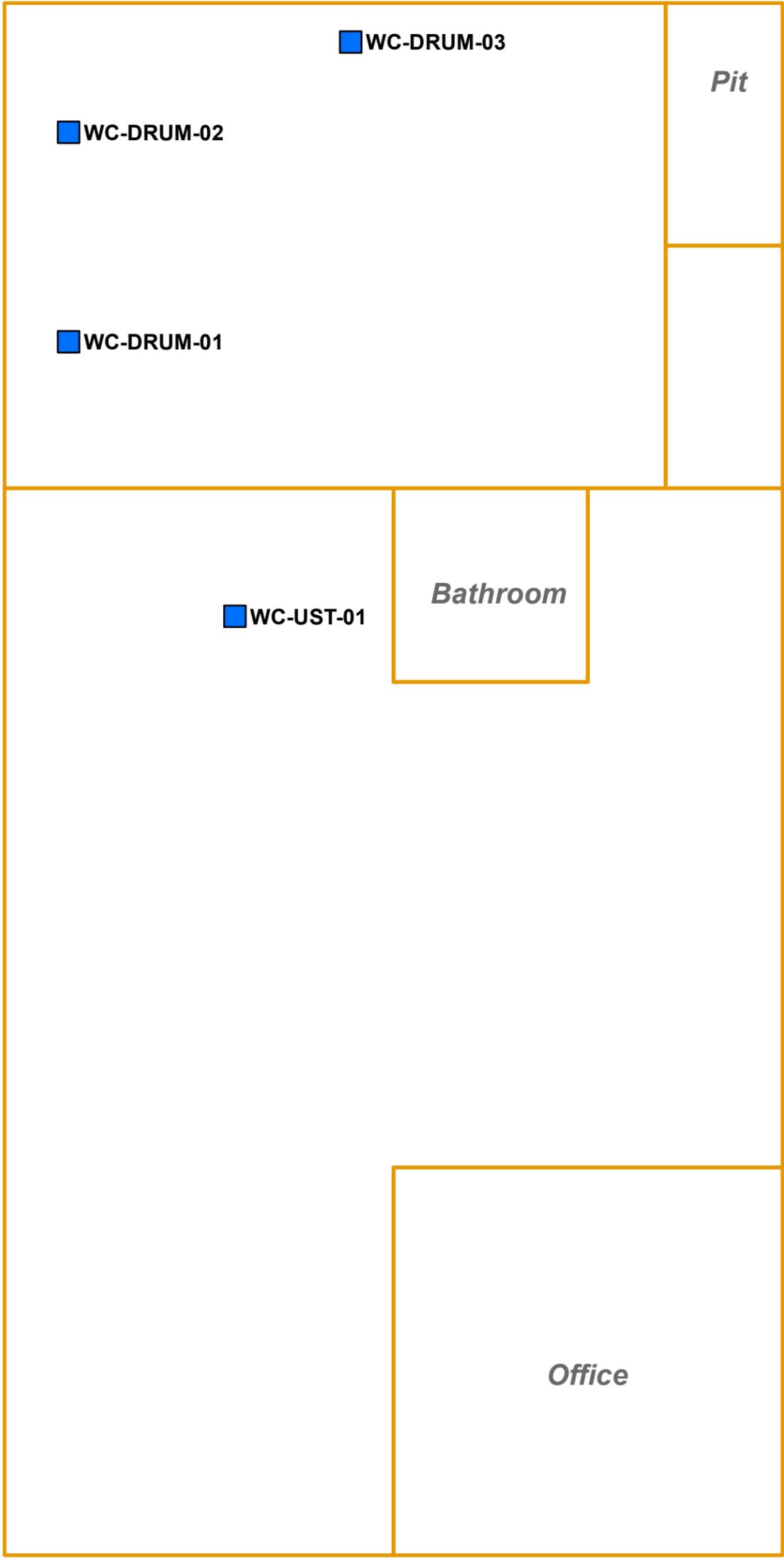
These samples were collected at the south adjoining property. Samples 01, 02, and 03 were collected along the southern exterior wall of the Site building. Sample 04 was collected in the middle of the adjoining yard.



WHITTIER CLEANERS SITE
 15010 CHARLEVOIX STREET
 GROSSE POINTE, WAYNE COUNTY, MI
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FIGURE 3
 OUTDOOR SAMPLING
 LOCATION MAP



Legend
 ■ Indoor Air Sampling Location
 □ Approximate Property Boundary

Note: Building/Room dimensions are approximate.

WHITTIER CLEANERS SITE
 15010 CHARLEVOIX STREET
 GROSSE POINTE, WAYNE COUNTY, MI
 TDD: S05-0001-1404-003

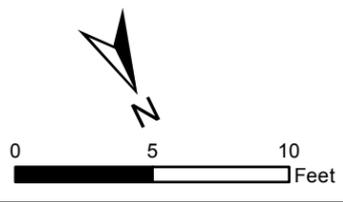


FIGURE 4
 INDOOR SAMPLING
 LOCATION MAP



- Legend**
- Outdoor Air Sampling Location
 - Approximate Property Boundary

Notes:

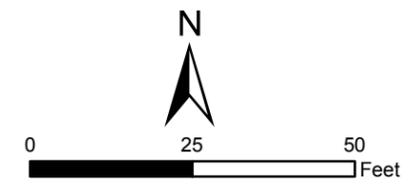
1. J qualifier: Indicates that the result was below the sample reporting limit, which corresponds to the lowest calibration standard.
- Note 2: The four soil gas samples yielded essentially the same mixture of analytes in substantially similar concentrations as the trip blank sample.
3. All results are presented in part per billion volume.

WC-SVP-03	
1,2-Dibromoethane	0.19 J

WC-SVP-02	
1,4-Dichlorobenzene	0.44 J
Benzene	1.5 J
Trichloroethene	0.58 J

WC-SVP-01	
1,2-Dibromoethane	0.54 J
1,4-Dichlorobenzene	0.56 J
Benzene	1.2 J
Hexachlorobutadiene	0.88 J
Trichloroethene	0.74 J

WC-SVP-04



WHITTIER CLEANERS SITE
 15010 CHARLEVOIX STREET
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FIGURE 5
 OUTDOOR SAMPLING:
 ANALYTICAL EXCEEDANCES
 MAP

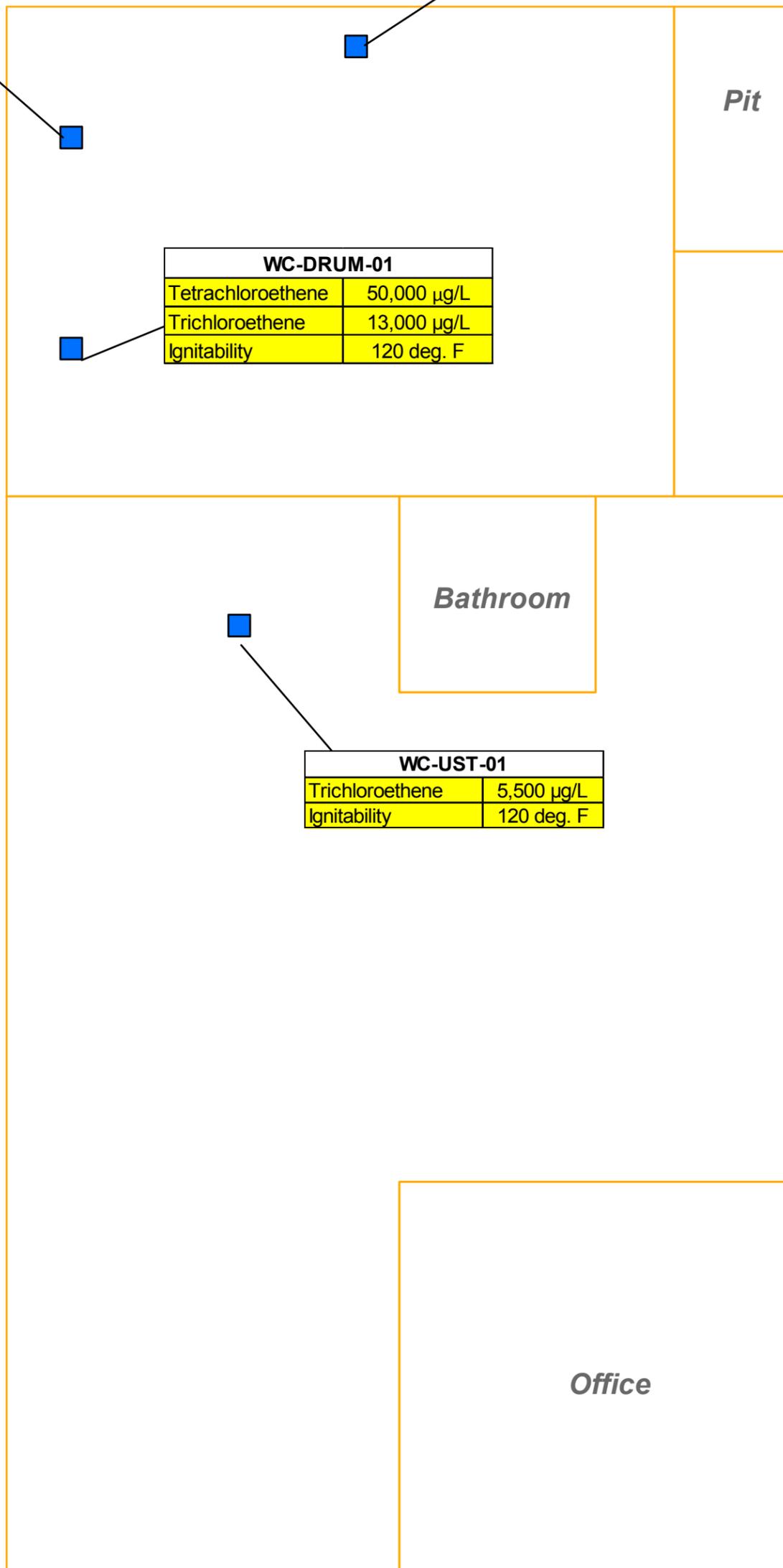


WC-DRUM-02	
Trichloroethene	7,900 µg/L
Ignitability	120 deg. F

WC-DRUM-03	
Trichloroethene	56,000 µg/L
Ignitability	120 deg. F

WC-DRUM-01	
Tetrachloroethene	50,000 µg/L
Trichloroethene	13,000 µg/L
Ignitability	120 deg. F

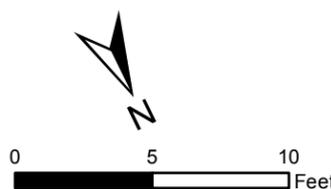
WC-UST-01	
Trichloroethene	5,500 µg/L
Ignitability	120 deg. F



Legend

- Indoor Air Sampling Location
- Approximate Property Boundary

Notes:
Building/Room dimensions are approximate.



WHITTIER CLEANERS SITE
15010 CHARLEVOIX STREET
GROSSE POINTE, WAYNE COUNTY, MI
TDD: S05-0001-1404-003



FIGURE 6
INDOOR SAMPLING:
ANALYTICAL EXCEEDANCES
MAP

APPENDIX B
PHOTOGRAPHIC DOCUMENTATION LOG



Photographic Documentation Log

Client: U.S. Environmental Protection Agency Region 5
Site Name: Whittier Cleaners Site
Location: Grosse Pointe Park, Wayne County, Michigan

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1404-003

Photograph: 1

Direction: West

Date: 05/20/14*

Photographer:
Kelly Thomas

Description:
Former dry cleaners site
and adjoining residential
property



Photograph: 2

Direction: East

Date: 05/20/14*

Photographer:
Kelly Thomas

Description:
Former retail area



*The date feature on the camera used to take the photographs in this log was incorrectly set. All of the photographs were taken on 05/20/2014, even though the photos themselves are printed (incorrectly) with the date of 05/19/2014.



Photographic Documentation Log

Client: U.S. Environmental Protection Agency Region 5
Site Name: Whittier Cleaners Site
Location: Grosse Pointe Park, Wayne County, Michigan

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1404-003

Photograph: 3
Direction: NA
Date: 05/20/14*
Photographer:
Kelly Thomas
Description:
Household cleaners
located in the former dry
cleaning area



Photograph: 4
Direction: NA
Date: 05/20/14*
Photographer:
Kelly Thomas
Description:
Drum-01



*The date feature on the camera used to take the photographs in this log was incorrectly set. All of the photographs were taken on 05/20/2014, even though the photos themselves are printed (incorrectly) with the date of 05/19/2014.



Photographic Documentation Log

Client: U.S. Environmental Protection Agency Region 5
Site Name: Whittier Cleaners Site
Location: Grosse Pointe Park, Wayne County, Michigan

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1404-003

<p>Photograph: 5</p> <p>Direction: NA</p> <p>Date: 05/20/14*</p> <p>Photographer: Kelly Thomas</p> <p>Description: Drum-02</p>	
---	---

<p>Photograph: 6</p> <p>Direction: NA</p> <p>Date: 05/20/14*</p> <p>Photographer: Kelly Thomas</p> <p>Description: Drum-03</p>	
---	--

*The date feature on the camera used to take the photographs in this log was incorrectly set. All of the photographs were taken on 05/20/2014, even though the photos themselves are printed (incorrectly) with the date of 05/19/2014.



Photographic Documentation Log

Client: U.S. Environmental Protection Agency Region 5
Site Name: Whittier Cleaners Site
Location: Grosse Pointe Park, Wayne County, Michigan

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1404-003

Photograph: 7
Direction: NA
Date: 05/20/14*
Photographer:
Kelly Thomas
Description:
UST-01



Photograph: 8
Direction: NA
Date: 05/20/14*
Photographer:
Kelly Thomas
Description:
Drum-02 and removed
underground storage
tank



*The date feature on the camera used to take the photographs in this log was incorrectly set. All of the photographs were taken on 05/20/2014, even though the photos themselves are printed (incorrectly) with the date of 05/19/2014.



Photographic Documentation Log

Client: U.S. Environmental Protection Agency Region 5
Site Name: Whittier Cleaners Site
Location: Grosse Pointe Park, Wayne County, Michigan

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1404-003

Photograph: 9

Direction: North

Date: 05/20/14*

Photographer:
Kelly Thomas

Description:
Former UST location



Photograph: 10

Direction: North

Date: 05/20/14*

Photographer:
Kelly Thomas

Description:
START personnel conducting soil gas sampling at the adjoining residential property, located adjacent to the site



*The date feature on the camera used to take the photographs in this log was incorrectly set. All of the photographs were taken on 05/20/2014, even though the photos themselves are printed (incorrectly) with the date of 05/19/2014.



Photographic Documentation Log

Client: U.S. Environmental Protection Agency Region 5
Site Name: Whittier Cleaners Site
Location: Grosse Pointe Park, Wayne County, Michigan

Prepared By: Tetra Tech, Inc.
TDD: S05-0001-1404-003

Photograph: 11

Direction: South

Date: 05/20/14*

Photographer:
Kelly Thomas

Description:
soil gas sampling
conducted near the
adjoining residence



*The date feature on the camera used to take the photographs in this log was incorrectly set. All of the photographs were taken on 05/20/2014, even though the photos themselves are printed (incorrectly) with the date of 05/19/2014.

APPENDIX C
ANALYTICAL RESULT TABLE AND DATA VERIFICATION REPORT

DATA VERIFICATION REPORT

This report provides a data verification for the analytical reports on samples collected from the Whittier Cleaners site in Grosse Pointe Park, Michigan. Tetra Tech START personnel collected soil gas and waste samples on 20 May 2014 and hand-carried them to RTI Laboratories, Inc. (RTI), in Livonia, Michigan for various analyses. RTI identified the samples as two separate sample delivery groups (SDG). Tetra Tech reviewed the summary reports submitted by RTI to verify that the requested analyses were performed and that results are acceptable for use. The following sections discuss each SDG in turn and discuss the results and any apparent problems. The final section provides an overall evaluation of the analytical results.

1.0 SDG No. 1405872

SDG No. 1405872 includes four soil gas samples and one trip blank collected in Tedlar® bags and analyzed for volatile organic compounds (VOC) by U.S. Environmental Protection Agency (EPA) Method TO-15. The analyses had no significant problems with sample preservation and holding times, laboratory control samples (LCS), laboratory duplicates, and surrogate recoveries.

The laboratory blank yielded a low concentration of xylene. However, the trip blank yielded detectable concentrations of half of the analytes, including relatively high concentrations of ethanol and the common laboratory contaminants acetone and methylene chloride. The four field samples yielded essentially the same mixture of analytes in substantially similar concentrations. Due to the high level of contamination in the trip blank, there is no firm evidence for any analytes in the soil gas represented by the field samples.

2.0 SDG No. 1405930

SDG No. 1405930 includes four liquid waste samples collected from drums and an underground storage tank and analyzed for waste characterization parameters, including toxicity characteristic leaching procedure (TCLP) VOCs by EPA SW-846 Method 8260B, TCLP semivolatile organic compounds (SVOC) by EPA SW-846 Method 8270D, TCLP metals by EPA SW-846 Methods 6010C and 7470A, ignitability (flash point) by EPA SW-845 Method 1010, corrosivity (pH) by EPA SW-846 Method 9045D, reactive cyanide by EPA SW-846 Method 7.3.3.2, and reactive sulfide by EPA SW-846 Method 7.3.4.2. There were no problems with sample preservation and holding times and laboratory duplicates. There were no irregularities with the ignitability and corrosivity analyses, but some problems were seen with each of the other analyses.

The VOC samples were analyzed at 500-fold dilutions, due to their high organic content, especially trichloroethene. The second and third (of three) surrogates in the drum samples and the third surrogate in the tank sample yielded excessive recovery, apparently because of interference from some of the components of the mixtures. Therefore all VOC results are qualified as estimated and flagged “J”.

The SVOC samples were analyzed at 100-fold dilutions, due to their high organic content. The only irregularity was an excessive recovery of pyridine from the LCS. Pyridine was not detected in the field samples so no qualifications were applied.

In the metals analyses, the laboratory (method) blank yielded a low concentration of copper. The field samples yielded considerably higher concentrations, so no qualifications were applied. The metals matrix spike/matrix spike duplicate (MS/MSD) analyses were performed on the tank sample. Recoveries of metals were near the upper quality control (QC) limit, with the MS results below it and most of the MSD results above it. These results appear to be due to an irregularity in the metal content of the material in the sample. All detected metals results are qualified as estimated and flagged “J”. Note that many of the metals results were already so qualified by RTI because they were below the sample reporting limit, which corresponds to the lowest calibration standard.

The LCS for reactive cyanide and reactive sulfide yielded zero recovery, despite the clean matrices used for them. Therefore the nondetected results for reactive cyanide and reactive sulfide in the field samples are qualified as rejected (flagged “R”). Cyanide and sulfide may be present in the sample, but the current analyses are inadequate to demonstrate their presence or absence.

3.0 Overall Evaluation

Problems occurred with both the soil gas and waste samples. The trip blank for the soil gas samples had a similar mix of VOCs at concentrations similar to those found in the field samples.. A significant problem seen in the organic analyses for the liquid waste samples is that the analytical methods are designed to detect trace concentrations of contaminants, so they have difficulty in coping with complex samples containing high concentrations of organic compounds. Similarly, the state of the analytical art does not provide reliable methods to detect the presence of cyanide and sulfide that can be readily released from samples (that is, be “reactive”).

Nevertheless, it is apparent that all four liquid waste samples meet the legal definition of a toxicity characteristic hazardous waste due to their trichloroethene concentrations—all more than 10 times the regulatory limit of 500 micrograms per liter—and that one sample (WC-DRUM-01) also exceeds the regulatory limit for tetrachloroethene.

Whittier Cleaners Site Assessment
Analytical Results
Summary of Detected RCRA and MDEQ Compounds

Parameter	Units	Sample Name	WC-SVP-01	WC-SVP-02	WC-SVP-03	WC-SVP-04	Trip Blank
		Sampling Date	05/20/14	05/20/14	05/20/14	05/20/14	05/20/14
		Sample Matrix	Air	Air	Air	Air	Air
		Regulatory Level	Analytical Result				
Total VOCs							
1,1,1-Trichloroethane	ppbv	952.93	Not detected	Not detected	Not detected	0.17 J	0.22 J
1,1,2-Trichloro-1,2,2-trifluoroethane	ppbv	4,045.00	0.5 J	0.42 J	0.2 J	0.24 J	0.29 J
1,1-Dichloroethene	ppbv	52.96	Not detected	Not detected	Not detected	0.21 J	Not detected
1,2,4-Trimethylbenzene	ppbv	1.49	1.2 J	1.2 J	0.56 J	0.4 J	0.73 J
1,2-Dibromoethane	ppbv	0.006	0.54 J	Not detected	0.19 J	Not detected	0.29 J
1,2-Dichlorobenzene	ppbv	34.93	0.54 J	0.44 J	Not detected	0.27 J	0.3 J
1,3,5-Trimethylbenzene	ppbv	Not Listed	0.74 J	0.6 J	0.28 J	0.32 J	0.4 J
1,3-Dichlorobenzene	ppbv	Not Listed	0.58 J	0.46 J	0.21 J	0.27 J	0.31 J
1,4-Dichlorobenzene	ppbv	0.43	0.56 J	0.44 J	0.2 J	0.25 J	0.29 J
2-Hexanone	ppbv	7.57	Not detected	Not detected	Not detected	0.38 J	0.33 J
4-Methyl-2-pentanone	ppbv	756.77	Not detected	2.5	1.7	0.73 J	2.8
Acetone	ppbv	13,471.57	43	51	27	14	39
Benzene	ppbv	1.13	1.2 J	1.5 J	0.56 J	0.52 J	0.79 J
Bromoform	ppbv	2.51	Not detected	Not detected	Not detected	Not detected	0.27 J
Carbon tetrachloride	ppbv	0.75	0.48 J	0.34 J	0.17 J	0.16 J	0.22 J
Chlorobenzene	ppbv	11.30	0.6 J	Not detected	Not detected	Not detected	0.33 J
Chlorodibromomethane	ppbv	Not Listed	0.5 J	Not detected	0.17 J	0.2 J	0.26 J
cis-1,2-Dichloroethene	ppbv	Not Listed	Not detected	Not detected	Not detected	0.15 J	Not detected
Ethanol	ppbv	Not Listed	24	30	14	8	17
Ethylbenzene	ppbv	2.53	Not detected	Not detected	Not detected	Not detected	0.89 J
Heptane	ppbv	Not Listed	1.5 J	2.2	1.2	0.69 J	0.33 J
Hexachlorobutadiene	ppbv	0.12	0.88 J	Not detected	Not detected	Not detected	0.67 J
m,p-Xylene	ppbv	23.03	3.3 J	3.7 J	1.8 J	1.2 J	2.7
Methylene chloride	ppbv	181.37	87	130	46	44	88
n-Hexane	ppbv	207.11	12	32	5	10	9.9
o-Xylene	ppbv	23.03	1.2 J	1.4 J	0.7 J	0.45 J	1.1
Styrene	ppbv	234.77	0.96 J	0.78 J	0.43 J	0.28 J	0.42 J
Tetrachloroethene	ppbv	6.19	0.82 J	0.54 J	0.3 J	0.27 J	0.36 J
Toluene	ppbv	1,379.91	5.3	5.5	2.4	1.5	3.5
Trans-1,2-Dichloroethene	ppbv	15.89	0.38 J	Not detected	Not detected	Not detected	0.22 J
Trichloroethene	ppbv	0.39	0.74 J	0.58 J	0.33 J	0.26 J	0.34 J
Trichlorofluoromethane	ppbv	129.93	Not detected	Not detected	Not detected	0.27 J	Not detected
Xylenes, Total	ppbv	23.03	4.5 J	5.1 J	2.5 J	1.6 J	3.8

Notes:

- (1) Total VOC criteria for soil vapor is EPA Region 9 Risk-Based Screening Levels (RSL) for ambient air times a factor of 10. based on the EPA's Vapor Intrusion Screening Level calculator (EPA 2013).
 - (2) Cells highlighted in yellow indicate an analytical result above the corresponding regulatory action level.
 - (3) J qualifier: Indicates that the result was below the sample reporting limit, which corresponds to the lowest calibration standard.
- ppbv = part per billion volume
VOC = Volatile Organic Compounds

Whittier Cleaners Site Assessment
Analytical Results
Summary of Detected RCRA and MDEQ Compounds

Parameter	Units	Sample Name	WC-DRUM-01	WC-DRUM-02	WC-DRUM-03	WC-UST-01
		Sampling Date	05/20/14	05/20/14	05/20/14	05/20/14
		Sample Matrix	Liquid	Liquid	Liquid	Liquid
		Regulatory Level	Analytical Result	Analytical Result	Analytical Result	Analytical Result
Reactive Cyanide						
	mg/kg	Not applicable	Not detected R	Not detected R	Not detected R	Not detected R
TCLP Metals Analysis						
Barium	µg/L	100,000	5 J	39 J	41 J	9.6 J
Cadmium	µg/L	1,000	1.4 J	2.9 J	2.6 J	2 J
Chromium	µg/L	5,000	Not detected	30 J	64 J	Not detected
Copper	µg/L	20,000,000	100 J	120 J	260 J	50 J
Lead	µg/L	5,000	18 J	20 J	180 J	Not detected
Zinc	µg/L	170,000,000	310 J	2400 J	520 J	89 J
Mercury	µg/L	200	1.3 J	1 J	1.7 J	0.77 J
TCLP Semivolatile Analysis						
	µg/L	Various	Not detected	Not detected	Not detected	Not detected
TCLP Volatile Analysis						
Benzene	µg/L	500	Not detected	Not detected	Not detected	160 J
Tetrachloroethene	µg/L	700	50,000 J	300 J	420 J	540 J
Trichloroethene	µg/L	500	13,000 J	7,900 J	56,000 J	5,500 J
Inorganic Analysis						
Ignitability	deg. F	<140	120	120	120	120
Corrosivity (pH)	S.U.	pH ≤ 2 or ≥ 12.5	7.01	7.04	7.03	7.02
Reactive Sulfide						
	mg/kg	Not applicable	Not detected R	Not detected R	Not detected R	Not detected R

Notes:

- (1) TCLP SVOC, TCLP VOC, Ignitability, Corrosivity, and TCLP Metals criteria is Code of Federal Regulations, Part 40, Section 261, Sub-sections 20 to 24.
- (2) Due to copper and zinc not being included in the TCLP Metals criteria shown in CRF, Part 40, Section 261.24, the results for these two metals were compared against the MDEQ Part 201 General Cleanup Criteria and Screening Levels for Direct Contact in residential areas (dated December 30, 2013).
- (3) Cells highlighted in yellow indicate an analytical result above the corresponding regulatory action level.
- (4) J qualifier: Results are estimated. Metals results were below the sample reporting limit, which correspond to the lowest calibration standards.
VOC results were qualified due to excessive surrogate recoveries.
- (5) R qualifier: Indicates that the result was rejected due to 0% recovery of the cyanide and sulfide in the laboratory control samples.

deg. F = Degrees Fahrenheit

MDEQ = Michigan Department of Environmental Quality

mg/kg = milligrams per liter

RCRA = Resource Conservation and Recovery Act of 1976

S.U. = Standard Units

SVOC = Semivolatile Organic Compounds

TCLP = Toxicity characteristic leaching procedure

µg/L = micrograms per liter

VOC = Volatile Organic Compounds

ATTACHMENT 1
LABORATORY ANALYTICAL RESULTS



RTI Laboratories
31628 Glendale St.
Livonia, MI 48150
TEL: (734) 422-8000
Website: www.rtilab.com

Friday, June 06, 2014

Sean Kane
Tetra Tech Inc.
26600 Telegraph Road
Suite 400
Southfield, MI 48034
TEL:
FAX:

RE: Tedlar Bags TO15
Work Order #: 1405872

Dear Sean Kane:

RTI Laboratories received 5 sample(s) on 5/21/2014 for the analyses presented in the following report. There were no problems with the analytical events associated with this report unless noted in the Case Narrative.

This report may only be reproduced in its entirety. Individual pages, reproduced without supporting documentation, do not contain related information and may be misinterpreted by other data reviewers.

Quality control data is within laboratory defined or method specified acceptance limits except if noted.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink that reads "Fred Hoitash". The signature is written in a cursive style with a large, prominent "F" and "H".

Fred Hoitash
Director, Sales and Field Services

RTI Laboratories - Workorder Sample Summary

WO#: 1405872

Date Reported: 6/6/2014
Original

Client: Tetra Tech Inc.
Project: Tedlar Bags TO15

Lab Sample ID	Client Sample ID	Tag No	Date Collected	Date Received	Matrix
1405872-001A	WC-SVP-01		5/20/2014 1:04 PM	5/21/2014 9:50 AM	Air
1405872-002A	WC-SVP-02		5/20/2014 1:19 PM	5/21/2014 9:50 AM	Air
1405872-003A	WC-SVP-03		5/20/2014 1:43 PM	5/21/2014 9:50 AM	Air
1405872-004A	WC-SVP-04		5/20/2014 1:59 PM	5/21/2014 9:50 AM	Air
1405872-005A	Trip Blank		5/20/2014 12:00 AM	5/21/2014 9:50 AM	Air

Client: Tetra Tech Inc.

Project: Tedlar Bags TO15

Concentrations reported with a J flag in the Qual field are values below the reporting limit (RL) but greater than the established method detection limit (MDL). There is greater uncertainty associated with these results and data should be considered as estimated. These analytes are not routinely reviewed nor narrated below as to their potential for being laboratory artifacts.

Concentrations reported with an E flag in the Qual field are values that exceed the upper quantification range. There is greater uncertainty associated with these results and data should be considered as estimated.

Any comments or problems with the analytical events associated with this report are noted below.

RTI Laboratories - Analytical Report

WO#: 1405872

Date Reported: 6/6/2014
Original

Client:	Tetra Tech Inc.	Collection Date:	5/20/2014 1:04:00 PM
Project:	Tedlar Bags TO15		
Lab ID:	1405872-001	Matrix:	Air
Client Sample ID:	WC-SVP-01		

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds		Method: EPATO-15			Analyst: AS1	
1,1,1-Trichloroethane	ND	2.0		ppbv	2	6/2/2014 12:24 PM
1,1,2,2-Tetrachloroethane	ND	2.0		ppbv	2	6/2/2014 12:24 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	0.50	2.0	J	ppbv	2	6/2/2014 12:24 PM
1,1,2-Trichloroethane	ND	2.0		ppbv	2	6/2/2014 12:24 PM
1,1-Dichloroethane	ND	2.0		ppbv	2	6/2/2014 12:24 PM
1,1-Dichloroethene	ND	2.0		ppbv	2	6/2/2014 12:24 PM
1,2,4-Trichlorobenzene	ND	2.0		ppbv	2	6/2/2014 12:24 PM
1,2,4-Trimethylbenzene	1.2	2.0	J	ppbv	2	6/2/2014 12:24 PM
1,2-Dibromoethane	0.54	2.0	J	ppbv	2	6/2/2014 12:24 PM
1,2-Dichlorobenzene	0.54	2.0	J	ppbv	2	6/2/2014 12:24 PM
1,2-Dichloroethane	ND	2.0		ppbv	2	6/2/2014 12:24 PM
1,2-Dichloropropane	ND	2.0		ppbv	2	6/2/2014 12:24 PM
1,3,5-Trimethylbenzene	0.74	2.0	J	ppbv	2	6/2/2014 12:24 PM
1,3-Butadiene	ND	2.0		ppbv	2	6/2/2014 12:24 PM
1,3-Dichlorobenzene	0.58	2.0	J	ppbv	2	6/2/2014 12:24 PM
1,4-Dichlorobenzene	0.56	2.0	J	ppbv	2	6/2/2014 12:24 PM
1,4-Dioxane	ND	2.0		ppbv	2	6/2/2014 12:24 PM
2-Butanone	ND	2.0		ppbv	2	6/2/2014 12:24 PM
2-Hexanone	ND	2.0		ppbv	2	6/2/2014 12:24 PM
2-Propanol	ND	2.0		ppbv	2	6/2/2014 12:24 PM
4-Methyl-2-pentanone	ND	2.0		ppbv	2	6/2/2014 12:24 PM
Acetone	43	2.0		ppbv	2	6/2/2014 12:24 PM
Benzene	1.2	2.0	J	ppbv	2	6/2/2014 12:24 PM
Benzyl chloride	ND	2.0		ppbv	2	6/2/2014 12:24 PM
Bromodichloromethane	ND	2.0		ppbv	2	6/2/2014 12:24 PM
Bromoform	ND	2.0		ppbv	2	6/2/2014 12:24 PM
Bromomethane	ND	2.0		ppbv	2	6/2/2014 12:24 PM
Carbon disulfide	ND	2.0		ppbv	2	6/2/2014 12:24 PM
Carbon tetrachloride	0.48	2.0	J	ppbv	2	6/2/2014 12:24 PM
Chlorobenzene	0.60	2.0	J	ppbv	2	6/2/2014 12:24 PM
Chlorodibromomethane	0.50	2.0	J	ppbv	2	6/2/2014 12:24 PM
Chloroethane	ND	2.0		ppbv	2	6/2/2014 12:24 PM
Chloroform	ND	2.0		ppbv	2	6/2/2014 12:24 PM
Chloromethane	ND	2.0		ppbv	2	6/2/2014 12:24 PM
cis-1,2-Dichloroethene	ND	2.0		ppbv	2	6/2/2014 12:24 PM
cis-1,3-dichloropropene	ND	2.0		ppbv	2	6/2/2014 12:24 PM
Cyclohexane	ND	4.0		ppbv	2	6/2/2014 12:24 PM
Dichlorodifluoromethane	ND	2.0		ppbv	2	6/2/2014 12:24 PM
Ethanol	24	10		ppbv	2	6/2/2014 12:24 PM
Ethyl acetate	ND	2.0		ppbv	2	6/2/2014 12:24 PM
Ethylbenzene	ND	4.0		ppbv	2	6/2/2014 12:24 PM
Heptane	1.5	2.0	J	ppbv	2	6/2/2014 12:24 PM

RTI Laboratories - Analytical Report

WO#: 1405872

Date Reported: 6/6/2014
Original

Client: Tetra Tech Inc.
Project: Tedlar Bags TO15
Lab ID: 1405872-001
Client Sample ID: WC-SVP-01

Collection Date: 5/20/2014 1:04:00 PM
Matrix: Air

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Hexachlorobutadiene	0.88	4.0	J	ppbv	2	6/2/2014 12:24 PM
m,p-Xylene	3.3	4.0	J	ppbv	2	6/2/2014 12:24 PM
Methylene chloride	87	10		ppbv	2	6/2/2014 12:24 PM
n-Hexane	12	4.0		ppbv	2	6/2/2014 12:24 PM
Naphthalene	ND	2.0		ppbv	2	6/2/2014 12:24 PM
o-Xylene	1.2	2.0	J	ppbv	2	6/2/2014 12:24 PM
Propylene	ND	2.0		ppbv	2	6/2/2014 12:24 PM
Styrene	0.96	2.0	J	ppbv	2	6/2/2014 12:24 PM
tert-Butyl Methyl Ether	ND	2.0		ppbv	2	6/2/2014 12:24 PM
Tetrachloroethene	0.82	2.0	J	ppbv	2	6/2/2014 12:24 PM
Tetrahydrofuran	ND	2.0		ppbv	2	6/2/2014 12:24 PM
Toluene	5.3	2.0		ppbv	2	6/2/2014 12:24 PM
trans-1,2-Dichloroethene	0.38	2.0	J	ppbv	2	6/2/2014 12:24 PM
trans-1,3-dichloropropene	ND	2.0		ppbv	2	6/2/2014 12:24 PM
Trichloroethene	0.74	2.0	J	ppbv	2	6/2/2014 12:24 PM
Trichlorofluoromethane	ND	2.0		ppbv	2	6/2/2014 12:24 PM
Vinyl acetate	ND	2.0		ppbv	2	6/2/2014 12:24 PM
Vinyl chloride	ND	2.0		ppbv	2	6/2/2014 12:24 PM
Xylenes, Total	4.5	6.0	J	ppbv	2	6/2/2014 12:24 PM
Surr: 4-Bromofluorobenzene	93.7	70-130		%REC	2	6/2/2014 12:24 PM

RTI Laboratories - Analytical Report

WO#: 1405872

Date Reported: 6/6/2014

Original

Client: Tetra Tech Inc.
 Project: Tedlar Bags TO15
 Lab ID: 1405872-002
 Client Sample ID: WC-SVP-02

Collection Date: 5/20/2014 1:19:00 PM
 Matrix: Air

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds		Method: EPATO-15			Analyst: AS1	
1,1,1-Trichloroethane	ND	2.0		ppbv	2	6/2/2014 1:54 PM
1,1,2,2-Tetrachloroethane	ND	2.0		ppbv	2	6/2/2014 1:54 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	0.42	2.0	J	ppbv	2	6/2/2014 1:54 PM
1,1,2-Trichloroethane	ND	2.0		ppbv	2	6/2/2014 1:54 PM
1,1-Dichloroethane	ND	2.0		ppbv	2	6/2/2014 1:54 PM
1,1-Dichloroethene	ND	2.0		ppbv	2	6/2/2014 1:54 PM
1,2,4-Trichlorobenzene	ND	2.0		ppbv	2	6/2/2014 1:54 PM
1,2,4-Trimethylbenzene	1.2	2.0	J	ppbv	2	6/2/2014 1:54 PM
1,2-Dibromoethane	ND	2.0		ppbv	2	6/2/2014 1:54 PM
1,2-Dichlorobenzene	0.44	2.0	J	ppbv	2	6/2/2014 1:54 PM
1,2-Dichloroethane	ND	2.0		ppbv	2	6/2/2014 1:54 PM
1,2-Dichloropropane	ND	2.0		ppbv	2	6/2/2014 1:54 PM
1,3,5-Trimethylbenzene	0.60	2.0	J	ppbv	2	6/2/2014 1:54 PM
1,3-Butadiene	ND	2.0		ppbv	2	6/2/2014 1:54 PM
1,3-Dichlorobenzene	0.46	2.0	J	ppbv	2	6/2/2014 1:54 PM
1,4-Dichlorobenzene	0.44	2.0	J	ppbv	2	6/2/2014 1:54 PM
1,4-Dioxane	ND	2.0		ppbv	2	6/2/2014 1:54 PM
2-Butanone	ND	2.0		ppbv	2	6/2/2014 1:54 PM
2-Hexanone	ND	2.0		ppbv	2	6/2/2014 1:54 PM
2-Propanol	ND	2.0		ppbv	2	6/2/2014 1:54 PM
4-Methyl-2-pentanone	2.5	2.0		ppbv	2	6/2/2014 1:54 PM
Acetone	51	2.0		ppbv	2	6/2/2014 1:54 PM
Benzene	1.5	2.0	J	ppbv	2	6/2/2014 1:54 PM
Benzyl chloride	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Bromodichloromethane	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Bromoform	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Bromomethane	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Carbon disulfide	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Carbon tetrachloride	0.34	2.0	J	ppbv	2	6/2/2014 1:54 PM
Chlorobenzene	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Chlorodibromomethane	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Chloroethane	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Chloroform	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Chloromethane	ND	2.0		ppbv	2	6/2/2014 1:54 PM
cis-1,2-Dichloroethene	ND	2.0		ppbv	2	6/2/2014 1:54 PM
cis-1,3-dichloropropene	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Cyclohexane	ND	4.0		ppbv	2	6/2/2014 1:54 PM
Dichlorodifluoromethane	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Ethanol	30	10		ppbv	2	6/2/2014 1:54 PM
Ethyl acetate	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Ethylbenzene	ND	4.0		ppbv	2	6/2/2014 1:54 PM
Heptane	2.2	2.0		ppbv	2	6/2/2014 1:54 PM

RTI Laboratories - Analytical Report

WO#: 1405872

Date Reported: 6/6/2014
Original

Client: Tetra Tech Inc.
Project: Tedlar Bags TO15
Lab ID: 1405872-002
Client Sample ID: WC-SVP-02

Collection Date: 5/20/2014 1:19:00 PM
Matrix: Air

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Hexachlorobutadiene	ND	4.0		ppbv	2	6/2/2014 1:54 PM
m,p-Xylene	3.7	4.0	J	ppbv	2	6/2/2014 1:54 PM
Methylene chloride	130	20		ppbv	4	6/5/2014 11:53 AM
n-Hexane	32	4.0		ppbv	2	6/2/2014 1:54 PM
Naphthalene	ND	2.0		ppbv	2	6/2/2014 1:54 PM
o-Xylene	1.4	2.0	J	ppbv	2	6/2/2014 1:54 PM
Propylene	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Styrene	0.78	2.0	J	ppbv	2	6/2/2014 1:54 PM
tert-Butyl Methyl Ether	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Tetrachloroethene	0.54	2.0	J	ppbv	2	6/2/2014 1:54 PM
Tetrahydrofuran	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Toluene	5.5	2.0		ppbv	2	6/2/2014 1:54 PM
trans-1,2-Dichloroethene	ND	2.0		ppbv	2	6/2/2014 1:54 PM
trans-1,3-dichloropropene	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Trichloroethene	0.58	2.0	J	ppbv	2	6/2/2014 1:54 PM
Trichlorofluoromethane	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Vinyl acetate	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Vinyl chloride	ND	2.0		ppbv	2	6/2/2014 1:54 PM
Xylenes, Total	5.1	6.0	J	ppbv	2	6/2/2014 1:54 PM
Surr: 4-Bromofluorobenzene	95.0	70-130		%REC	2	6/2/2014 1:54 PM

RTI Laboratories - Analytical Report

WO#: 1405872

Date Reported: 6/6/2014

Original

Client: Tetra Tech Inc.
 Project: Tedlar Bags TO15
 Lab ID: 1405872-003
 Client Sample ID: WC-SVP-03

Collection Date: 5/20/2014 1:43:00 PM
 Matrix: Air

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds		Method: EPATO-15			Analyst: AS1	
1,1,1-Trichloroethane	ND	1.0		ppbv	1	6/2/2014 2:39 PM
1,1,2,2-Tetrachloroethane	ND	1.0		ppbv	1	6/2/2014 2:39 PM
1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	1.0	J	ppbv	1	6/2/2014 2:39 PM
1,1,2-Trichloroethane	ND	1.0		ppbv	1	6/2/2014 2:39 PM
1,1-Dichloroethane	ND	1.0		ppbv	1	6/2/2014 2:39 PM
1,1-Dichloroethene	ND	1.0		ppbv	1	6/2/2014 2:39 PM
1,2,4-Trichlorobenzene	ND	1.0		ppbv	1	6/2/2014 2:39 PM
1,2,4-Trimethylbenzene	0.56	1.0	J	ppbv	1	6/2/2014 2:39 PM
1,2-Dibromoethane	0.19	1.0	J	ppbv	1	6/2/2014 2:39 PM
1,2-Dichlorobenzene	ND	1.0		ppbv	1	6/2/2014 2:39 PM
1,2-Dichloroethane	ND	1.0		ppbv	1	6/2/2014 2:39 PM
1,2-Dichloropropane	ND	1.0		ppbv	1	6/2/2014 2:39 PM
1,3,5-Trimethylbenzene	0.28	1.0	J	ppbv	1	6/2/2014 2:39 PM
1,3-Butadiene	ND	1.0		ppbv	1	6/2/2014 2:39 PM
1,3-Dichlorobenzene	0.21	1.0	J	ppbv	1	6/2/2014 2:39 PM
1,4-Dichlorobenzene	0.20	1.0	J	ppbv	1	6/2/2014 2:39 PM
1,4-Dioxane	ND	1.0		ppbv	1	6/2/2014 2:39 PM
2-Butanone	ND	1.0		ppbv	1	6/2/2014 2:39 PM
2-Hexanone	ND	1.0		ppbv	1	6/2/2014 2:39 PM
2-Propanol	ND	1.0		ppbv	1	6/2/2014 2:39 PM
4-Methyl-2-pentanone	1.7	1.0		ppbv	1	6/2/2014 2:39 PM
Acetone	27	1.0		ppbv	1	6/2/2014 2:39 PM
Benzene	0.56	1.0	J	ppbv	1	6/2/2014 2:39 PM
Benzyl chloride	ND	1.0		ppbv	1	6/2/2014 2:39 PM
Bromodichloromethane	ND	1.0		ppbv	1	6/2/2014 2:39 PM
Bromoform	ND	1.0		ppbv	1	6/2/2014 2:39 PM
Bromomethane	ND	1.0		ppbv	1	6/2/2014 2:39 PM
Carbon disulfide	ND	1.0		ppbv	1	6/2/2014 2:39 PM
Carbon tetrachloride	0.17	1.0	J	ppbv	1	6/2/2014 2:39 PM
Chlorobenzene	ND	1.0		ppbv	1	6/2/2014 2:39 PM
Chlorodibromomethane	0.17	1.0	J	ppbv	1	6/2/2014 2:39 PM
Chloroethane	ND	1.0		ppbv	1	6/2/2014 2:39 PM
Chloroform	ND	1.0		ppbv	1	6/2/2014 2:39 PM
Chloromethane	ND	1.0		ppbv	1	6/2/2014 2:39 PM
cis-1,2-Dichloroethene	ND	1.0		ppbv	1	6/2/2014 2:39 PM
cis-1,3-dichloropropene	ND	1.0		ppbv	1	6/2/2014 2:39 PM
Cyclohexane	ND	2.0		ppbv	1	6/2/2014 2:39 PM
Dichlorodifluoromethane	ND	1.0		ppbv	1	6/2/2014 2:39 PM
Ethanol	14	5.0		ppbv	1	6/2/2014 2:39 PM
Ethyl acetate	ND	1.0		ppbv	1	6/2/2014 2:39 PM
Ethylbenzene	ND	2.0		ppbv	1	6/2/2014 2:39 PM
Heptane	1.2	1.0		ppbv	1	6/2/2014 2:39 PM

RTI Laboratories - Analytical Report

WO#: 1405872

Date Reported: 6/6/2014
Original

Client: Tetra Tech Inc.
Project: Tedlar Bags TO15
Lab ID: 1405872-003
Client Sample ID: WC-SVP-03

Collection Date: 5/20/2014 1:43:00 PM
Matrix: Air

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Hexachlorobutadiene	ND	2.0		ppbv	1	6/2/2014 2:39 PM
m,p-Xylene	1.8	2.0	J	ppbv	1	6/2/2014 2:39 PM
Methylene chloride	46	5.0		ppbv	1	6/2/2014 2:39 PM
n-Hexane	5.0	2.0		ppbv	1	6/2/2014 2:39 PM
Naphthalene	ND	1.0		ppbv	1	6/2/2014 2:39 PM
o-Xylene	0.70	1.0	J	ppbv	1	6/2/2014 2:39 PM
Propylene	ND	1.0		ppbv	1	6/2/2014 2:39 PM
Styrene	0.43	1.0	J	ppbv	1	6/2/2014 2:39 PM
tert-Butyl Methyl Ether	ND	1.0		ppbv	1	6/2/2014 2:39 PM
Tetrachloroethene	0.30	1.0	J	ppbv	1	6/2/2014 2:39 PM
Tetrahydrofuran	ND	1.0		ppbv	1	6/2/2014 2:39 PM
Toluene	2.4	1.0		ppbv	1	6/2/2014 2:39 PM
trans-1,2-Dichloroethene	ND	1.0		ppbv	1	6/2/2014 2:39 PM
trans-1,3-dichloropropene	ND	1.0		ppbv	1	6/2/2014 2:39 PM
Trichloroethene	0.33	1.0	J	ppbv	1	6/2/2014 2:39 PM
Trichlorofluoromethane	ND	1.0		ppbv	1	6/2/2014 2:39 PM
Vinyl acetate	ND	1.0		ppbv	1	6/2/2014 2:39 PM
Vinyl chloride	ND	1.0		ppbv	1	6/2/2014 2:39 PM
Xylenes, Total	2.5	3.0	J	ppbv	1	6/2/2014 2:39 PM
Surr: 4-Bromofluorobenzene	93.4	70-130		%REC	1	6/2/2014 2:39 PM

RTI Laboratories - Analytical Report

WO#: 1405872

Date Reported: 6/6/2014

Original

Client: Tetra Tech Inc.
 Project: Tedlar Bags TO15
 Lab ID: 1405872-004
 Client Sample ID: WC-SVP-04

Collection Date: 5/20/2014 1:59:00 PM
 Matrix: Air

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds		Method: EPATO-15			Analyst: AS1	
1,1,1-Trichloroethane	0.17	1.0	J	ppbv	1	6/3/2014 5:34 AM
1,1,2,2-Tetrachloroethane	ND	1.0		ppbv	1	6/3/2014 5:34 AM
1,1,2-Trichloro-1,2,2-trifluoroethane	0.24	1.0	J	ppbv	1	6/3/2014 5:34 AM
1,1,2-Trichloroethane	ND	1.0		ppbv	1	6/3/2014 5:34 AM
1,1-Dichloroethane	ND	1.0		ppbv	1	6/3/2014 5:34 AM
1,1-Dichloroethene	0.21	1.0	J	ppbv	1	6/3/2014 5:34 AM
1,2,4-Trichlorobenzene	ND	1.0		ppbv	1	6/3/2014 5:34 AM
1,2,4-Trimethylbenzene	0.40	1.0	J	ppbv	1	6/3/2014 5:34 AM
1,2-Dibromoethane	ND	1.0		ppbv	1	6/3/2014 5:34 AM
1,2-Dichlorobenzene	0.27	1.0	J	ppbv	1	6/3/2014 5:34 AM
1,2-Dichloroethane	ND	1.0		ppbv	1	6/3/2014 5:34 AM
1,2-Dichloropropane	ND	1.0		ppbv	1	6/3/2014 5:34 AM
1,3,5-Trimethylbenzene	0.32	1.0	J	ppbv	1	6/3/2014 5:34 AM
1,3-Butadiene	ND	1.0		ppbv	1	6/3/2014 5:34 AM
1,3-Dichlorobenzene	0.27	1.0	J	ppbv	1	6/3/2014 5:34 AM
1,4-Dichlorobenzene	0.25	1.0	J	ppbv	1	6/3/2014 5:34 AM
1,4-Dioxane	ND	1.0		ppbv	1	6/3/2014 5:34 AM
2-Butanone	ND	1.0		ppbv	1	6/3/2014 5:34 AM
2-Hexanone	0.38	1.0	J	ppbv	1	6/3/2014 5:34 AM
2-Propanol	ND	1.0		ppbv	1	6/3/2014 5:34 AM
4-Methyl-2-pentanone	0.73	1.0	J	ppbv	1	6/3/2014 5:34 AM
Acetone	14	1.0		ppbv	1	6/3/2014 5:34 AM
Benzene	0.52	1.0	J	ppbv	1	6/3/2014 5:34 AM
Benzyl chloride	ND	1.0		ppbv	1	6/3/2014 5:34 AM
Bromodichloromethane	ND	1.0		ppbv	1	6/3/2014 5:34 AM
Bromoform	ND	1.0		ppbv	1	6/3/2014 5:34 AM
Bromomethane	ND	1.0		ppbv	1	6/3/2014 5:34 AM
Carbon disulfide	ND	1.0		ppbv	1	6/3/2014 5:34 AM
Carbon tetrachloride	0.16	1.0	J	ppbv	1	6/3/2014 5:34 AM
Chlorobenzene	ND	1.0		ppbv	1	6/3/2014 5:34 AM
Chlorodibromomethane	0.20	1.0	J	ppbv	1	6/3/2014 5:34 AM
Chloroethane	ND	1.0		ppbv	1	6/3/2014 5:34 AM
Chloroform	ND	1.0		ppbv	1	6/3/2014 5:34 AM
Chloromethane	ND	1.0		ppbv	1	6/3/2014 5:34 AM
cis-1,2-Dichloroethene	0.15	1.0	J	ppbv	1	6/3/2014 5:34 AM
cis-1,3-dichloropropene	ND	1.0		ppbv	1	6/3/2014 5:34 AM
Cyclohexane	ND	2.0		ppbv	1	6/3/2014 5:34 AM
Dichlorodifluoromethane	ND	1.0		ppbv	1	6/3/2014 5:34 AM
Ethanol	8.0	5.0		ppbv	1	6/3/2014 5:34 AM
Ethyl acetate	ND	1.0		ppbv	1	6/3/2014 5:34 AM
Ethylbenzene	ND	2.0		ppbv	1	6/3/2014 5:34 AM
Heptane	0.69	1.0	J	ppbv	1	6/3/2014 5:34 AM

RTI Laboratories - Analytical Report

WO#: 1405872

Date Reported: 6/6/2014
Original

Client: Tetra Tech Inc.
Project: Tedlar Bags TO15
Lab ID: 1405872-004
Client Sample ID: WC-SVP-04

Collection Date: 5/20/2014 1:59:00 PM
Matrix: Air

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Hexachlorobutadiene	ND	2.0		ppbv	1	6/3/2014 5:34 AM
m,p-Xylene	1.2	2.0	J	ppbv	1	6/3/2014 5:34 AM
Methylene chloride	44	5.0		ppbv	1	6/3/2014 5:34 AM
n-Hexane	10	2.0		ppbv	1	6/3/2014 5:34 AM
Naphthalene	ND	1.0		ppbv	1	6/3/2014 5:34 AM
o-Xylene	0.45	1.0	J	ppbv	1	6/3/2014 5:34 AM
Propylene	ND	1.0		ppbv	1	6/3/2014 5:34 AM
Styrene	0.28	1.0	J	ppbv	1	6/3/2014 5:34 AM
tert-Butyl Methyl Ether	ND	1.0		ppbv	1	6/3/2014 5:34 AM
Tetrachloroethene	0.27	1.0	J	ppbv	1	6/3/2014 5:34 AM
Tetrahydrofuran	ND	1.0		ppbv	1	6/3/2014 5:34 AM
Toluene	1.5	1.0		ppbv	1	6/3/2014 5:34 AM
trans-1,2-Dichloroethene	ND	1.0		ppbv	1	6/3/2014 5:34 AM
trans-1,3-dichloropropene	ND	1.0		ppbv	1	6/3/2014 5:34 AM
Trichloroethene	0.26	1.0	J	ppbv	1	6/3/2014 5:34 AM
Trichlorofluoromethane	0.27	1.0	J	ppbv	1	6/3/2014 5:34 AM
Vinyl acetate	ND	1.0		ppbv	1	6/3/2014 5:34 AM
Vinyl chloride	ND	1.0		ppbv	1	6/3/2014 5:34 AM
Xylenes, Total	1.6	3.0	J	ppbv	1	6/3/2014 5:34 AM
Surr: 4-Bromofluorobenzene	95.6	70-130		%REC	1	6/3/2014 5:34 AM

RTI Laboratories - Analytical Report

WO#: 1405872

Date Reported: 6/6/2014

Original

Client: Tetra Tech Inc.
 Project: Tedlar Bags TO15
 Lab ID: 1405872-005
 Client Sample ID: Trip Blank

Collection Date: 5/20/2014 12:00:00 AM
 Matrix: Air

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds		Method: EPATO-15			Analyst: AS1	
1,1,1-Trichloroethane	0.22	1.0	J	ppbv	1	6/2/2014 11:40 AM
1,1,2,2-Tetrachloroethane	ND	1.0		ppbv	1	6/2/2014 11:40 AM
1,1,2-Trichloro-1,2,2-trifluoroethane	0.29	1.0	J	ppbv	1	6/2/2014 11:40 AM
1,1,2-Trichloroethane	ND	1.0		ppbv	1	6/2/2014 11:40 AM
1,1-Dichloroethane	ND	1.0		ppbv	1	6/2/2014 11:40 AM
1,1-Dichloroethene	ND	1.0		ppbv	1	6/2/2014 11:40 AM
1,2,4-Trichlorobenzene	ND	1.0		ppbv	1	6/2/2014 11:40 AM
1,2,4-Trimethylbenzene	0.73	1.0	J	ppbv	1	6/2/2014 11:40 AM
1,2-Dibromoethane	0.29	1.0	J	ppbv	1	6/2/2014 11:40 AM
1,2-Dichlorobenzene	0.30	1.0	J	ppbv	1	6/2/2014 11:40 AM
1,2-Dichloroethane	ND	1.0		ppbv	1	6/2/2014 11:40 AM
1,2-Dichloropropane	ND	1.0		ppbv	1	6/2/2014 11:40 AM
1,3,5-Trimethylbenzene	0.40	1.0	J	ppbv	1	6/2/2014 11:40 AM
1,3-Butadiene	ND	1.0		ppbv	1	6/2/2014 11:40 AM
1,3-Dichlorobenzene	0.31	1.0	J	ppbv	1	6/2/2014 11:40 AM
1,4-Dichlorobenzene	0.29	1.0	J	ppbv	1	6/2/2014 11:40 AM
1,4-Dioxane	ND	1.0		ppbv	1	6/2/2014 11:40 AM
2-Butanone	ND	1.0		ppbv	1	6/2/2014 11:40 AM
2-Hexanone	0.33	1.0	J	ppbv	1	6/2/2014 11:40 AM
2-Propanol	ND	1.0		ppbv	1	6/2/2014 11:40 AM
4-Methyl-2-pentanone	2.8	1.0		ppbv	1	6/2/2014 11:40 AM
Acetone	39	1.0		ppbv	1	6/2/2014 11:40 AM
Benzene	0.79	1.0	J	ppbv	1	6/2/2014 11:40 AM
Benzyl chloride	ND	1.0		ppbv	1	6/2/2014 11:40 AM
Bromodichloromethane	ND	1.0		ppbv	1	6/2/2014 11:40 AM
Bromoform	0.27	1.0	J	ppbv	1	6/2/2014 11:40 AM
Bromomethane	ND	1.0		ppbv	1	6/2/2014 11:40 AM
Carbon disulfide	ND	1.0		ppbv	1	6/2/2014 11:40 AM
Carbon tetrachloride	0.22	1.0	J	ppbv	1	6/2/2014 11:40 AM
Chlorobenzene	0.33	1.0	J	ppbv	1	6/2/2014 11:40 AM
Chlorodibromomethane	0.26	1.0	J	ppbv	1	6/2/2014 11:40 AM
Chloroethane	ND	1.0		ppbv	1	6/2/2014 11:40 AM
Chloroform	ND	1.0		ppbv	1	6/2/2014 11:40 AM
Chloromethane	ND	1.0		ppbv	1	6/2/2014 11:40 AM
cis-1,2-Dichloroethene	ND	1.0		ppbv	1	6/2/2014 11:40 AM
cis-1,3-dichloropropene	ND	1.0		ppbv	1	6/2/2014 11:40 AM
Cyclohexane	ND	2.0		ppbv	1	6/2/2014 11:40 AM
Dichlorodifluoromethane	ND	1.0		ppbv	1	6/2/2014 11:40 AM
Ethanol	17	5.0		ppbv	1	6/2/2014 11:40 AM
Ethyl acetate	ND	1.0		ppbv	1	6/2/2014 11:40 AM
Ethylbenzene	0.89	2.0	J	ppbv	1	6/2/2014 11:40 AM
Heptane	0.33	1.0	J	ppbv	1	6/2/2014 11:40 AM

RTI Laboratories - Analytical Report

WO#: 1405872

Date Reported: 6/6/2014
Original

Client: Tetra Tech Inc.
Project: Tedlar Bags TO15
Lab ID: 1405872-005
Client Sample ID: Trip Blank

Collection Date: 5/20/2014 12:00:00 AM
Matrix: Air

Analysis	Result	RL	Qual	Units	DF	Date Analyzed
Hexachlorobutadiene	0.67	2.0	J	ppbv	1	6/2/2014 11:40 AM
m,p-Xylene	2.7	2.0		ppbv	1	6/2/2014 11:40 AM
Methylene chloride	88	20		ppbv	4	6/5/2014 11:08 AM
n-Hexane	9.9	2.0		ppbv	1	6/2/2014 11:40 AM
Naphthalene	ND	1.0		ppbv	1	6/2/2014 11:40 AM
o-Xylene	1.1	1.0		ppbv	1	6/2/2014 11:40 AM
Propylene	ND	1.0		ppbv	1	6/2/2014 11:40 AM
Styrene	0.42	1.0	J	ppbv	1	6/2/2014 11:40 AM
tert-Butyl Methyl Ether	ND	1.0		ppbv	1	6/2/2014 11:40 AM
Tetrachloroethene	0.36	1.0	J	ppbv	1	6/2/2014 11:40 AM
Tetrahydrofuran	ND	1.0		ppbv	1	6/2/2014 11:40 AM
Toluene	3.5	1.0		ppbv	1	6/2/2014 11:40 AM
trans-1,2-Dichloroethene	0.22	1.0	J	ppbv	1	6/2/2014 11:40 AM
trans-1,3-dichloropropene	ND	1.0		ppbv	1	6/2/2014 11:40 AM
Trichloroethene	0.34	1.0	J	ppbv	1	6/2/2014 11:40 AM
Trichlorofluoromethane	ND	1.0		ppbv	1	6/2/2014 11:40 AM
Vinyl acetate	ND	1.0		ppbv	1	6/2/2014 11:40 AM
Vinyl chloride	ND	1.0		ppbv	1	6/2/2014 11:40 AM
Xylenes, Total	3.8	3.0		ppbv	1	6/2/2014 11:40 AM
Surr: 4-Bromofluorobenzene	94.2	70-130		%REC	1	6/2/2014 11:40 AM

RTI Laboratories - DATES REPORT

WO#: 1405872

Date Reported: 6/6/2014
Original

Client: Tetra Tech Inc.
Project: Tedlar Bags TO15

Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	Leachate Date	Prep Date	Analysis Date
1405872-001A	WC-SVP-01	5/20/2014 1:04 PM	Air	EPA_TO15-Volatile Organic Compounds		6/2/2014 12:24 PM	6/2/2014 12:24 PM
1405872-002A	WC-SVP-02	5/20/2014 1:19 PM	Air	EPA_TO15-Volatile Organic Compounds		6/2/2014 1:54 PM	6/2/2014 1:54 PM
				EPA_TO15-Volatile Organic Compounds		6/5/2014 11:53 AM	6/5/2014 11:53 AM
1405872-003A	WC-SVP-03	5/20/2014 1:43 PM	Air	EPA_TO15-Volatile Organic Compounds		6/2/2014 2:39 PM	6/2/2014 2:39 PM
1405872-004A	WC-SVP-04	5/20/2014 1:59 PM	Air	EPA_TO15-Volatile Organic Compounds		6/3/2014 5:34 AM	6/3/2014 5:34 AM
1405872-005A	Trip Blank	5/20/2014 12:00 AM	Air	EPA_TO15-Volatile Organic Compounds		6/2/2014 11:40 AM	6/2/2014 11:40 AM
				EPA_TO15-Volatile Organic Compounds		6/5/2014 11:08 AM	6/5/2014 11:08 AM

RTI Laboratories - QC SUMMARY REPORT

WO#: 1405872

Date Reported: 6/6/2014
Original

Client: Tetra Tech Inc.

Project: Tedlar Bags TO15

Batch ID: R68043

Sample ID:	VOA1 LCS 060214	Samp Type:	LCS	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	6/2/2014	RunNo:	68043
Client ID:	LCSW	Batch ID:	R68043	TestNo:	TO-15	Analysis Date:	6/2/2014	SeqNo:	1325140		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	12	1.0	10.10	0	119	68	125				
1,1,2,2-Tetrachloroethane	15	1.0	10.70	0	138	65	127				S
1,1,2-Trichloro-1,2,2-trifluoroethane	11	1.0	9.500	0	116	66	126				
1,1,2-Trichloroethane	14	1.0	10.60	0	135	73	119				S
1,1-Dichloroethane	12	1.0	10.10	0	122	68	126				
1,1-Dichloroethene	11	1.0	9.800	0	115	61	133				
1,2,4-Trichlorobenzene	12	1.0	9.500	0	126	55	142				
1,2,4-Trimethylbenzene	13	1.0	10.40	0	127	66	132				
1,2-Dibromoethane	14	1.0	10.40	0	133	74	122				S
1,2-Dichlorobenzene	13	1.0	10.00	0	132	63	129				S
1,2-Dichloroethane	12	1.0	10.40	0	115	65	128				
1,2-Dichloropropane	14	1.0	10.50	0	130	69	123				S
1,3,5-Trimethylbenzene	13	1.0	10.30	0	126	67	130				
1,3-Butadiene	11	1.0	10.40	0	110	66	134				
1,3-Dichlorobenzene	14	1.0	10.10	0	140	65	130				S
1,4-Dichlorobenzene	13	1.0	10.10	0	130	60	131				
1,4-Dioxane	14	1.0	10.20	0	139	71	122				S
2-Butanone	12	1.0	10.50	0	113	67	130				
2-Hexanone	12	1.0	10.40	0	120	62	128				
2-Propanol	12	1.0	10.60	0	113	52	125				
4-Methyl-2-pentanone	12	1.0	10.00	0	124	67	130				
Acetone	12	1.0	10.50	0	118	58	128				
Benzene	14	1.0	10.40	0	134	69	119				S
Benzyl chloride	14	1.0	10.10	0	135	50	147				
Bromodichloromethane	12	1.0	10.20	0	122	72	128				
Bromoform	14	1.0	10.30	0	135	66	139				
Bromomethane	14	1.0	10.10	0	134	63	134				S
Carbon disulfide	13	1.0	9.800	0	135	57	134				S
Carbon tetrachloride	12	1.0	10.30	0	115	68	132				
Chlorobenzene	14	1.0	10.60	0	128	70	119				S
Chlorodibromomethane	13	1.0	10.20	0	127	70	130				

RTI Laboratories - QC SUMMARY REPORT

WO#: 1405872

Date Reported: 6/6/2014
Original

Client: Tetra Tech Inc.

Project: Tedlar Bags TO15

Batch ID: R68043

Sample ID:	VOA1 LCS 060214	Samp Type:	LCS	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	6/2/2014	RunNo:	68043
Client ID:	LCSW	Batch ID:	R68043	TestNo:	TO-15	Analysis Date:	6/2/2014	SeqNo:	1325140		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Chloroethane	13	1.0	9.900	0	136	63	127				S
Chloroform	13	1.0	10.70	0	119	68	123				
Chloromethane	11	1.0	9.900	0	116	59	132				
cis-1,2-Dichloroethene	14	1.0	10.60	0	130	70	121				S
cis-1,3-dichloropropene	14	1.0	10.70	0	130	70	128				S
Cyclohexane	12	2.0	10.30	0	117	70	117				S
Dichlorodifluoromethane	12	1.0	10.00	0	115	59	128				
Ethanol	8.5	5.0	9.000	0	94.3	59	125				
Ethyl acetate	12	1.0	10.70	0	113	65	128				
Ethylbenzene	12	2.0	10.50	0	115	70	124				
Heptane	12	1.0	10.40	0	115	69	123				
Hexachlorobutadiene	14	2.0	9.600	0	144	56	138				S
m,p-Xylene	25	2.0	20.60	0	120	61	134				
Methylene chloride	10	5.0	9.700	0	104	62	115				
n-Hexane	12	2.0	10.40	0	116	63	120				
Naphthalene	13	1.0	9.900	0	129	57	138				
o-Xylene	13	1.0	10.70	0	119	67	125				
Propylene	12	1.0	10.50	0	110	70	130				
Styrene	14	1.0	10.60	0	129	73	127				S
tert-Butyl Methyl Ether	13	1.0	10.30	0	125	24	150				
Tetrachloroethene	13	1.0	10.30	0	128	66	124				S
Tetrahydrofuran	12	1.0	10.40	0	118	64	123				
Toluene	14	1.0	10.60	0	128	66	119				S
trans-1,2-Dichloroethene	12	1.0	9.900	0	119	67	124				
trans-1,3-dichloropropene	13	1.0	11.00	0	121	75	133				
Trichloroethene	13	1.0	10.20	0	130	71	123				S
Trichlorofluoromethane	9.4	1.0	10.80	0	86.7	62	126				
Vinyl acetate	12	1.0	10.00	0	123	56	139				
Vinyl chloride	11	1.0	10.00	0	113	64	127				
Xylenes, Total	37	3.0	31.30	0	119	70	130				
Surr: 4-Bromofluorobenzene	12		12.50		98.6	70	130				

RTI Laboratories - QC SUMMARY REPORT

WO#: 1405872

Date Reported: 6/6/2014
Original

Client: Tetra Tech Inc.

Project: Tedlar Bags TO15

Batch ID: R68043

Sample ID:	VOA1 MBLK 060214	Samp Type:	MBLK	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	6/2/2014	RunNo:	68043
Client ID:	PBW	Batch ID:	R68043	TestNo:	TO-15			Analysis Date:	6/2/2014	SeqNo:	1325142

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	ND	1.0									
1,1,2,2-Tetrachloroethane	ND	1.0									
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	1.0									
1,1,2-Trichloroethane	ND	1.0									
1,1-Dichloroethane	ND	1.0									
1,1-Dichloroethene	ND	1.0									
1,2,4-Trichlorobenzene	ND	1.0									
1,2,4-Trimethylbenzene	ND	1.0									
1,2-Dibromoethane	ND	1.0									
1,2-Dichlorobenzene	ND	1.0									
1,2-Dichloroethane	ND	1.0									
1,2-Dichloropropane	ND	1.0									
1,3,5-Trimethylbenzene	ND	1.0									
1,3-Butadiene	ND	1.0									
1,3-Dichlorobenzene	ND	1.0									
1,4-Dichlorobenzene	ND	1.0									
1,4-Dioxane	ND	1.0									
2-Butanone	ND	1.0									
2-Hexanone	ND	1.0									
2-Propanol	ND	1.0									
4-Methyl-2-pentanone	ND	1.0									
Acetone	ND	1.0									
Benzene	ND	1.0									
Benzyl chloride	ND	1.0									
Bromodichloromethane	ND	1.0									
Bromoform	ND	1.0									
Bromomethane	ND	1.0									
Carbon disulfide	ND	1.0									
Carbon tetrachloride	ND	1.0									
Chlorobenzene	ND	1.0									
Chlorodibromomethane	ND	1.0									

RTI Laboratories - QC SUMMARY REPORT

WO#: 1405872

Date Reported: 6/6/2014
Original

Client: Tetra Tech Inc.

Project: Tedlar Bags TO15

Batch ID: R68043

Sample ID:	VOA1 MBLK 060214	Samp Type:	MBLK	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	6/2/2014	RunNo:	68043
Client ID:	PBW	Batch ID:	R68043	TestNo:	TO-15			Analysis Date:	6/2/2014	SeqNo:	1325142

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Chloroethane	ND	1.0									
Chloroform	ND	1.0									
Chloromethane	ND	1.0									
cis-1,2-Dichloroethene	ND	1.0									
cis-1,3-dichloropropene	ND	1.0									
Cyclohexane	ND	2.0									
Dichlorodifluoromethane	ND	1.0									
Ethanol	ND	5.0									
Ethyl acetate	ND	1.0									
Ethylbenzene	ND	2.0									
Heptane	ND	1.0									
Hexachlorobutadiene	ND	2.0									
m,p-Xylene	0.55	2.0									J
Methylene chloride	ND	5.0									
n-Hexane	ND	2.0									
Naphthalene	ND	1.0									
o-Xylene	ND	1.0									
Propylene	ND	1.0									
Styrene	ND	1.0									
tert-Butyl Methyl Ether	ND	1.0									
Tetrachloroethene	ND	1.0									
Tetrahydrofuran	ND	1.0									
Toluene	ND	1.0									
trans-1,2-Dichloroethene	ND	1.0									
trans-1,3-dichloropropene	ND	1.0									
Trichloroethene	ND	1.0									
Trichlorofluoromethane	ND	1.0									
Vinyl acetate	ND	1.0									
Vinyl chloride	ND	1.0									
Xylenes, Total	ND	3.0									
Surr: 4-Bromofluorobenzene	11		12.50		89.2	70	130				

RTI Laboratories - QC SUMMARY REPORT

WO#: 1405872

Date Reported: 6/6/2014
Original

Client: Tetra Tech Inc.

Project: Tedlar Bags TO15

Batch ID: R68043

Sample ID:	1405872-001ADUP	Samp Type:	DUP	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	6/2/2014	RunNo:	68043
Client ID:	WC-SVP-01	Batch ID:	R68043	TestNo:	TO-15	Analysis Date:	6/2/2014	SeqNo:	1325145		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
1,1,1-Trichloroethane	0.36	2.0						0	200	25	JR
1,1,2,2-Tetrachloroethane	ND	2.0						0	0	25	
1,1,2-Trichloro-1,2,2-trifluoroethane	0.46	2.0						0.5000	8.33	25	J
1,1,2-Trichloroethane	ND	2.0						0	0	25	
1,1-Dichloroethane	ND	2.0						0	0	25	
1,1-Dichloroethene	ND	2.0						0	0	25	
1,2,4-Trichlorobenzene	ND	2.0						0	0	25	
1,2,4-Trimethylbenzene	1.1	2.0						1.220	8.55	25	J
1,2-Dibromoethane	0.46	2.0						0.5400	16.0	25	J
1,2-Dichlorobenzene	0.48	2.0						0.5400	11.8	25	J
1,2-Dichloroethane	ND	2.0						0	0	25	
1,2-Dichloropropane	ND	2.0						0	0	25	
1,3,5-Trimethylbenzene	0.66	2.0						0.7400	11.4	25	J
1,3-Butadiene	ND	2.0						0	0	25	
1,3-Dichlorobenzene	0.50	2.0						0.5800	14.8	25	J
1,4-Dichlorobenzene	0.48	2.0						0.5600	15.4	25	J
1,4-Dioxane	ND	2.0						0	0	25	
2-Butanone	ND	2.0						0	0	25	
2-Hexanone	ND	2.0						0	0	25	
2-Propanol	ND	2.0						0	0	25	
4-Methyl-2-pentanone	ND	2.0						0	0	25	
Acetone	42	2.0						43.26	2.48	25	
Benzene	1.1	2.0						1.200	5.13	25	J
Benzyl chloride	ND	2.0						0	0	25	
Bromodichloromethane	0.40	2.0						0	200	25	JR
Bromoform	ND	2.0						0	0	25	
Bromomethane	ND	2.0						0	0	25	
Carbon disulfide	ND	2.0						0	0	25	
Carbon tetrachloride	0.38	2.0						0.4800	23.3	25	J
Chlorobenzene	ND	2.0						0.6000	200	25	R
Chlorodibromomethane	0.42	2.0						0.5000	17.4	25	J

RTI Laboratories - QC SUMMARY REPORT

WO#: 1405872

Date Reported: 6/6/2014
Original

Client: Tetra Tech Inc.

Project: Tedlar Bags TO15

Batch ID: R68043

Sample ID:	1405872-001ADUP	Samp Type:	DUP	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	6/2/2014	RunNo:	68043
Client ID:	WC-SVP-01	Batch ID:	R68043	TestNo:	TO-15	Analysis Date:	6/2/2014	SeqNo:	1325145		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual
Chloroethane	ND	2.0						0	0	25	
Chloroform	ND	2.0						0	0	25	
Chloromethane	ND	2.0						0	0	25	
cis-1,2-Dichloroethene	ND	2.0						0	0	25	
cis-1,3-dichloropropene	ND	2.0						0	0	25	
Cyclohexane	ND	4.0						0	0	25	
Dichlorodifluoromethane	ND	2.0						0	0	25	
Ethanol	24	10						24.18	1.07	25	
Ethyl acetate	ND	2.0						0	0	25	
Ethylbenzene	ND	4.0						0	0	25	
Heptane	1.4	2.0						1.540	6.71	25	J
Hexachlorobutadiene	0.78	4.0						0.8800	12.0	25	J
m,p-Xylene	3.0	4.0						3.260	8.97	25	J
Methylene chloride	89	10						87.42	1.50	25	
n-Hexane	12	4.0						12.10	1.48	25	
Naphthalene	ND	2.0						0	0	25	
o-Xylene	1.1	2.0						1.240	10.2	25	J
Propylene	ND	2.0						0	0	25	
Styrene	0.82	2.0						0.9600	15.7	25	J
tert-Butyl Methyl Ether	ND	2.0						0	0	25	
Tetrachloroethene	0.68	2.0						0.8200	18.7	25	J
Tetrahydrofuran	ND	2.0						0	0	25	
Toluene	4.9	2.0						5.340	9.00	25	
trans-1,2-Dichloroethene	ND	2.0						0.3800	200	25	R
trans-1,3-dichloropropene	ND	2.0						0	0	25	
Trichloroethene	0.60	2.0						0.7400	20.9	25	J
Trichlorofluoromethane	ND	2.0						0	0	25	
Vinyl acetate	ND	2.0						0	0	25	
Vinyl chloride	ND	2.0						0	0	25	
Xylenes, Total	4.1	6.0						4.500	9.30	25	J
Surr: 4-Bromofluorobenzene	24		25.00		95.0	70	130		0	25	

RTI Laboratories - QC SUMMARY REPORT

WO#: 1405872

Date Reported: 6/6/2014
Original

Client: Tetra Tech Inc.

Project: Tedlar Bags TO15

Batch ID: R68054

Sample ID:	VOA1 MBLK 060514	Samp Type:	MBLK	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	6/5/2014	RunNo:	68054	
Client ID:	PBW	Batch ID:	R68054	TestNo:	TO-15			Analysis Date:	6/5/2014	SeqNo:	1325383	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Methylene chloride	ND	5.0										
Surr: 4-Bromofluorobenzene	11		12.50			86.5	70	130				

Sample ID:	VOA1 LCS 060514	Samp Type:	LCS	Test Code:	EPA_TO15	Units:	ppbv	Prep Date:	6/5/2014	RunNo:	68054	
Client ID:	LCSW	Batch ID:	R68054	TestNo:	TO-15			Analysis Date:	6/5/2014	SeqNo:	1325384	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Value	%RPD	RPDLimit	Qual

Methylene chloride	8.4	5.0	9.700	0		86.5	62	115				
Surr: 4-Bromofluorobenzene	12		12.50			95.8	70	130				

DEFINITIONS:

DF: Dilution factor; the dilution factor applied to the prepared sample.

DUP: Duplicate; aliquots of a sample taken from the same container under laboratory conditions and processed and analyzed independently, used to calculate Precision (%RPD).

LCS: Laboratory Control Sample; prepared by adding a known amount of target analytes to a specified amount of clean matrix and prepared with the batch of samples, used to calculate Accuracy (%REC).

LCSD: A duplicate LCS sample, used to calculate both Accuracy (%REC) and Precision (%RPD)

MBLK: Method Blank; a sample of similar matrix that does not contain target analytes or interference that may impact the analytical results and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedure, used to assess and verify that the analytical process is free of contamination.

MDL: Method Detection Limit; The lowest concentration of analyte that can be detected by the method in the applicable matrix.

Mg/Kg or mg/L: Units of part per million (PPM) – milligram per Kilogram (W/W) or milligram per Liter (W/V).

MS: Matrix Spike; prepared by adding a known amount of target analytes to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available, used to calculate Accuracy (%REC)

MSD: A duplicate MS sample, used to calculate both Accuracy (%REC) and Precision (%RPD)

% REC: Percent Recovery of a known spike (SPK); a measure of accuracy expressed as a percentage of a measured (recovered) concentration compared to the known concentration (SPK) added to the sample. This is compared to the Low Limit and High Limit.

% RPD: Relative Percent Difference; a measure of precision expressed as a percentage of the difference between two duplicates relative to the average concentration. This is compared to the RPD Limit.

PL: Permit limit;; Not included on all reports. Used primarily for wastewater discharge permits.

PQL: Practical Quantitation Limit; The lowest verified limit to which data is quantified without qualifications. Analyte concentrations below PQL are reported either as ND or as a number with a "J" qualifier.

Qual: Qualifier that applies to the analyte reported

RL: Reporting Limit: See PQL

SPK: Spike; used in the QC section for both SPK Value and SPK Ref Val

Ug/Kg or ug/L: Units of part per billion (PPB) – microgram per Kilogram (W/W) or microgram per Liter (W/V).

QUALIFIERS:

*X: Reported value exceeds the maximum allowed concentration by regulation or permit

B: Analyte detected in the associated Method Blank at a concentration > RL.

E: Analyte concentration reported that exceeds the upper calibration standard. Greater uncertainty is associated with this result and data should be considered estimated.

H: Holding time for preparation or analysis has been exceeded

J: Analyte concentration is reported, and is less than the PQL and greater than or equal to the established MDL. Greater uncertainty is associated with this result and data reported is estimated. These analytes are not routinely reviewed nor narrated as to their potential for being laboratory artifacts.

M: Manual Integration used to determine area response

ND: Not detected at the Reporting Limit

P: Second column RPD exceeds 40%

R: % RPD exceeds control limits

S: % REC exceeds control limits

T: MBLK result is greater than 1/2 of the LOQ

U: The analyte concentration is less than the DL.



RTI LABORATORIES

CHAIN OF CUSTODY

Environmental Sciences Division
31628 Glendale Street
Livonia MI, 48150

Materials Testing Division
33080 Industrial Road
Livonia, MI 48150

PAGE: OF:
PHONE: (734) 422-8000
FAX: (734) 422-5344
www.rtilab.com

1405872

RTI WORK ORDER NO:

Please Include Email Address of Report Recipient !!!

Form with fields: SUBMITTING COMPANY (Tetra Tech), REPORT TO (Name) (Sean Kane), BILL TO, PROJECT NAME, PROJECT #, QUOTE #, COMPANY (Tetra Tech), ADDRESS, SAMPLING LOCATION, ADDRESS, SPECIAL INSTRUCTIONS, CITY, STATE, ZIP, CITY, STATE, ZIP, PHONE, EMAIL, P.O NUMBER.

SAME

Table with columns: ITEM NUMBER, SAMPLE I.D., DATE SAMPLED, TIME SAMPLED, MATRIX CODE, NBR OF BOTTLES, NBR OF CONTAINERS AND PRESERVATIVES (NONE, HCL, HNO3, H2SO4, NaOH, Methanol, OTHER), TESTS REQUESTED (TCLP VOC, TCLP SVOC, TCLP METALS, PH, Flash, Reactivity, VAC), pH Acceptable? Y/N, COMMENTS.

RF

T0-15

Form with fields: Relinquished By, Date, Time, Received By, Date, Time, REPORT TRANSMITTAL DESIRED: [] HARDCOPY, [] FAX, [] EMAIL, [] ONLINE, ALL REPORTING IS VIA THE RTI "FLASHPOINT" ONLINE SYSTEM UNLESS OTHERWISE SPECIFIED, FOR LAB USE ONLY, Temp of samples, On Wet Ice?, Comments.

TURNAROUND DESIRED: Standard [X] RUSH: Next BD [], 2nd BD [], 3rd BD [] Note: RUSH requests will incur surcharges!

Distribution: White - Lab; Pink - Field. See reverse side for Laboratory Terms and Conditions of Service. MATRIX CODES: A = AIR, SD = SOLID, DW = DRINKING WATER, SL = SLUDGE, GW = GROUNDWATER, SV = SOLVENT WASTE, L = LIQUID, W = WATER, O = OIL, WP = WIPE, WW = WASTE WATER, SW = SURFACE WATER, S = SOIL.